Steph: Hi, Damo, and welcome back to the show.

Damo: Thank you, Steph. Hi, how you going?

Steph: I'm very well. It's been an interesting time but I certainly wanted to open a discussion with you today about the link between our immune system and our gut and so much more not only because of what's going on in the world at the moment, but certainly to expand on the knowledge around our immune system. So let's start. I believe offline we were certainly discussing some of the consumer research that's being conducted. So, yeah, tell us more about what has been uncovered about our knowledge so far.

Damo: Yeah, thanks, Steph. Well, we were having a little chat and there's a company that manufactures or has the patent for a number of different strains of bacteria that both you and I use, and I was meeting with them recently and they were just going through some of the research they'd done at a consumer level and they researched, small study, but they researched a small group to try and understand whether nor not this consumer group linked gut health to the immune system. And whilst it seems logical for us that yes, of course, that is the case 100% of the respondents said that, "Yes, they knew that gut health was important and yes, they knew that the immune system was important." But they didn't actually draw the link between a healthy gut and the immune system.

So they found that really interesting because that's their whole space which they play in and then I found that really interesting too because that's the space that both you and I play in, and I was thinking, "Oh my gosh. If the consumer doesn't quite yet understand, fully understand that the gut is a major contributor to the immune system in terms of its health both ways then we've got a long way to go." So I thought we should have a bit of a chat about that.

Steph: Yeah, I'm with you and something that we've spoken about before but, obviously, there's a big gap in knowledge. We've seen with the pandemic, with the panic buying I had a real concern about the types of food that people were stocking up on. I mean, first and foremost, people were looking towards lots of refined foods and we had forgotten about fruit and vegetables, as we often do when, yeah, we certainly weren't thinking about what we needed to be eating to support our immune system. So absolutely, I think it's a really important conversation to have.

Damo: Yeah. Cool, yeah. Well, same. So, obviously, everyone bought heaps of toilet paper which we know and and everyone bought heaps of tissues, which we know but then everyone bought a whole lot of packaged food. So frozen dinners, frozen veggies, frozen pomerzets (potato gems). Is that how you say it? I think that's what they are. Those little potato things. Potato chips. Fished fingers, pies, sausage rolls, ice creams. The only healthy thing that I saw missing from the freezer section was blueberries. Everything was still there, and so I too was despondent because all the fresh stuff was still there. Everything fresh was still there but everything processed, pasta, pasta sauces, and so on and so forth. All of that stuff was missing. That was all gone and as soon as it came out it ran off the shelves. It was like, "Oh my gosh. The world's coming to an end. I better stock up on tinned tuna." So that was what was going on. So, fortunately, the silliness has ended and people have come to their sense but I still do notice quite a lot of fresh stuff still on the shelves.

Steph: Yep, I agree. Certainly, there were all the limits in how many packets of every single frozen food you couldn't buy because people were really getting carried away, and I think it's important to have a look at the data. When we understand who's at risk for COVID-19. So initially, there was this pretty much single conversation about it impacting one, the elderly, and those that are immune suppressed, and that's very fair and very true. Then we started seeing a lot of younger people either getting sick or even unfortunately dying from COVID-19, and we're obviously then seeing a lot more fear because it wasn't just impacting the elderly and those that were "sick."

But we do see in the literature is that the biggest common denominator that's not being discussed is actually insulin resistance or metabolic syndrome, and these comorbidities are proving to have a huge influence on our risk for COVID, and certainly whether we recover or whether we go on to get quite ill. And I think it's something that needs to be discussed because whilst it's very important that we are across what's going on around, you know, whether there will be a vaccine and we'll talk about this today. We've got to look at what we can control and if we control what we eat, A, we won't have insulin resistance and we certainly won't have metabolic syndrome, but that starts with the food that we eat and if you do have insulin resistance or metabolic syndrome it's actually quite easy to reverse if you're willing to make the changes that got you there in the first place.

Damo: Yeah, that's exactly right and it's great that you put it that way too because the changes from what got you there in the first place could be different for individuals, for different people and there's a whole lot of chat around that and, obviously, there's some models that say that it's saturated fats, some models that say that it's carbohydrates, some models that say that it's excess in protein. So that means that everyone is going to be individual and that's why it's really important that you seek the help of somebody like Steph. I'm just giving you a little plug here, Steph. Seek the help of somebody like Steph who can actually analyse your previous behaviour and then set you up with a more appropriate behaviour moving forward.

So whilst it's easy for people just to say, "Oh, this is the cause of syndrome X or metabolic syndrome X, and this is the reason why you've got pre-diabetes, or this is the reason why you've got polycystic ovarian syndrome, or this is the reason why you now have got centripetal obesity." And then blanket it. If you speak to somebody who's qualified in the space they can actually give you the right and most

appropriate program. And all of those diseases that I just rattled off are all the same they're just different symptoms.

Steph: Yeah, you're right and they can come from a different cause but certainly the research that I'll link in the show notes is about really as simple as blood glucose control, it definitely starts there and, obviously, when that is going the wrong way then obviously over a longer period of time is where it starts to look like insulin resistance, metabolic disease. And so, yeah, how do we fix that? Well, it starts with real food and it's a conversation that we've had 14 billion times but we're still seeing western cultures falling into the trap of convenience and not making time to acknowledge that one of the biggest decisions they make is what goes on their plate, and certainly, fresh food needs to be a huge priority.

Damo: Absolutely, absolutely. We have had this discussion two times the amount of people that actually live on the plant. You're right. 14 billion times.

Damo: I love it. I love it. So let's go back to the immune system just for a little bit of a chat. I think that's really important. We'll just finish, I suppose polish that off and then we'll go into all of the other bits and pieces. What was interesting that came out of this research was that people didn't realise that ... And this is a number that gets thrown around a lot. That 70 to 80% of your immune system exists in your gut. Now, I just want to qualify that number because it's 70 to 80% of your lymphatic system resides in your gut. Now, somewhere along the line that's been extrapolated to mean immune system, but it's actually your lymphatic system which is part of your immune system. So, excuse me, as I regurgitate a bit of water.

I could feel this rumbling coming up. I think I've been swallowing air while I've been talking and I was like, "Oh, am I going to burp mid-sentence here or can I just push on?" And I couldn't. So I'm just explaining myself. So anyway, so your GALT, your gastrointestinal system associated lymphoid tissue is in around your gut and in that space, in that GALT, G-A-L-T. That houses 70 to 80% of all of the lymphatic system. So there's other parts of your immune system, or other parts of your body that house lymphatic glands and we're talking about tonsils, adenoids, appendix, and other glands that are within your body like the ones under your arms and the ones that are under your chin. So you submandibular glands. The ones that are in your groin.

So there's other areas of large quantities of lymph, but 70 to 80% of all of your lymph actually resides in your GALT. Now, the reason why that's important is because when your body is presented with items that aren't self, that aren't you or your body thinks that something is not-self and it mounts a response or an attack, then this is where things go wrong and a large part of the insult actually occurs in the gastrointestinal system and this is your immune system.

At the same time, histamine for example, which is a chemical that comes out of a white blood cell called a mast cell. That is as a result of a response to the mucus membrane being introduced to something that's not-self, that your body doesn't like. So that'll be an allergic response. So your probiotics and good healthy bacteria in your body, and good healthy food that fuels the bacteria govern the immune response in the gut. That's where I wanted to go with that. Did I lose you there, Steph?

Steph: No.

Damo: Because if I lost you then I've lost everybody else.

Steph: No, I mean, I think it's really important to explain that because, yes, we do hear that statement being rattled off quite a lot, myself included. So just really understanding that is the focus and so, yeah, I totally agree. We've got to really look at how we look after our immune system and what the first step should be. You know, I think in the west we're very much like a pill for an ill and so I think we're used to being saved. We're used to being saved by maybe big pharma, or we're used to in this case, waiting for a vaccine like we have in history for other conditions, and whilst all of that can be important we have to take back control. We have to really look after ourselves as that first point so that we can start to move away from some of the fear-based information that we're seeing online, and really understand that it does start with our health and certainly, our immune system needs to be priority number one.

Damo: Absolutely. Absolutely. It's so true. The thing to remember I suppose is for everybody listening to this call and anybody that you share this with is that by the time something presents as a symptom there's been a problem there for quite some time. So in the old model, let's call the old model the western model or what some people might say is modern medicine, or some people might say is mainstream medicine. That I would consider to be the old model now because the greater understanding is that the body acts as a unit, not as individual machines or individual parts.

So in the old model, it used to be, "Well, if something is dysfunctional let's fix that part. If we can't fix it with drugs let's remove it." Now, most people reject it these days and so now what we've got to look for is pre or subclinical symptoms of a dysfunction before it becomes a disease, and this is really important. So let's say for example you're getting mucus running down the back of your throat every time you eat a meal. Well, that would indicate to me and to Steph that you're eating something that's probably not right. Now, you might go, "Oh, but it's just avocado, and lettuce, and tomatoes, and some bocconcini cheese with some basil leaves, and some boiled chicken, and some olive oil on top of that." You might just say that but there could be something in there that might be causing problems.

Now, it's unlikely that would cause a problem but if it did cause a problem that should be investigated. It might be that you're having peanut butter sandwiches on white bread with manufactured highly processed peanut butter with some Nuttelex, for example, because you're trying to be dairy-free and that there could be a big problem for you. Or it could be that you're just chowing down an ice cream every night when you're watching younger trying to relive your younger days or something like that.

So you've got to try to understand what it is are your triggers, but your early warning signs are there and you just need to understand what they are. So think about what's happening in the roof of your mouth or at the back of your throat when you're eating, and then think about how that makes your tummy feel and then what happens the next day when you move all that out. Is it a good movement? Et cetera,

et cetera, so these are the things that you are being told by your body that you need to be aware of.

Steph: Yeah, because you don't just wake up one day with metabolic syndrome, or you don't just wake up one day with cardiovascular disease and we know these are the comorbidities that are proving to be most problematic when it comes to exacerbating the infection, or increasing your risk but that's a process that for many people happens over decades. And it's pretty hard to ignore but we do because of that old model, like you said, and certainly putting our trust, or the trust of our health only in someone else and not in ourselves.

So, yeah, there should be lots of warnings along the way. There should be lots of signs and symptoms, and an appreciation that something needs to change. And metabolic syndrome and cardiovascular disease have a lot of similarities if we think about the inflammatory nature and why we're seeing these conditions so prevalent in 2020 for a lot of people as a result of the food pyramid and the incorrect guidance that we've followed for most of our life.

Damo: Yeah, yeah. Absolutely. So true. Couldn't agree more. Couldn't agree more. I suppose then a next step of that and just considering why we call medicine the old model, it was a very reactive, reductionist kind of model in that symptoms would appear. If we're using metabolic syndrome X or cardiovascular disease we might say, "Well, cardiovascular disease might be high blood pressure or cholesterol, or a heart attack." That's kind of your three signs and the symptoms of cardiovascular disease.

For metabolic syndrome X, it might've been a slight raise in glucose or it might've been some centripetal obesity or weight gain in around the girth, the belly button area. For girls, it might've been some back fat. You know, there's different signs and symptoms, but really it's not until the disease was full-blown that any kind of intervention took place. So medication would've been given in an attempt to thwart any further progression. In the case of metabolic syndrome X, there's really only one drug that they really use these days, which is Metformin and that's contentious at best with, you know, I don't know about you, Steph, but I call it shady science around that. I don't think it's that good and then with regards to cardiovascular disease you're looking at cholesterol-lowering drugs which we know have been shown to increase the risk of heart attack anyway. So you go, "Well, why would I do that?" Well, blood pressure-lowering drugs, which will make you tired.

And so they're not fixes. So we've got to try and work out if we're going to use the new model of healthcare which is a preventative model you can either go down a preventative drug route which is just the old model flipped on its head, or you move down a preventative model which is a lifestyle model which is what Steph and I are talking about and so. And that's my preference. That's where I'd like to head because that's something that you can control and if you're in control of your health then you're in control of your destiny. Whereas, otherwise your drug companies or medicine is in control of your destiny and your health, and if you give sanctity away to somebody else of your health you're powerless and you just don't want that.

Steph: Yeah, and so I think it is worthwhile discussing the timeline to the Coronavirus, or rather the COVID-19 vaccine. It is a really controversial topic. So I'm really conscious of that and -

Damo: Me too.

Steph: - It's not something that I want to create a storm about, but I do see a lot of people "Waiting for this vaccine." Like all of their hopes are reliant on the fact that we might have a solution in 18 months, and whilst it's great that there's 100 different teams around the world that are testing, and essentially in the race for this $2 billion dollar vaccine, what would happen if there was never one found? A rhetorical question, because there are experts saying at the moment that it's proving to be a little bit more difficult. We do have historical examples like one, we don't have a vaccine for the common cold. More recently, in 2003 when we had a SARS outbreak. So the severe acute respiratory syndrome outbreak, a vaccine was never developed but the virus burnt out and was no longer an issue.

So we do have more recent examples where it's not always possible. So I think we have to keep that in mind. We can't just rest on our laurels and hope that Bill Gates is going to give us a solution when it may not be possible. What would we do then?

Damo: Oh, no. That's so true. That's a great point, Steph. And going back to that SARS vaccine that was never found and then also that the virus burnt out. We could find that with this particular virus too, which they're calling SARS 2. It could be that it also burns out or it mutates to be something else, and the quest to find the vaccine for this may arrive too late.

So these are the things that we think you should be doing to keep your immune system poised for any kind of infection. Not just the Coronavirus, but also a rhinovirus, you know? Like a cold. And also, other kinds of infections that might take place. It could be a bacterial infection of the upper respiratory system. Or a lung infection that's bacterial. So if you keep your immune system good then you're better prepared to go to fight them more successfully, these infections, than waiting for someone else to come and be your saviour, and that's what we're kind of saying.

Steph: Yeah, absolutely. We can't rush these things to market. They need to be developed over a period to time, they need to be tested, there needs to be ideally clinical trials. So really that takes longer than 18 months. So we can't forget about that. I'm actually reading a book called The Vaccine Race at the moment which I'm finding really fascinating. It's not SARS related but it is quite an interesting historical conversation around what's happened in the past where vaccines were rushed to market so there has been examples in the '60s where that did happen and people were quite sick, and there were fatalities as a result. So whilst I think, again-

Damo: Oh, right? Really?

Steph: Yes, yes. I believe it was for Rubella. I'll have to go back and check that but-

Damo: OH, it was too. That's right. I remember that, yeah. That's right.

Steph: And so that was all rushed and every single person involved in that saga lost their job, and so we just need to, yeah, really take our time. Which I hope will happen in time now that we're seeing that perhaps there is already a diluted potency, because like you said that's what happened in 2003 and it's being mapped. So COVID-19's

being mapped at the moment and it is potentially looking like it's virulency is decreasing. So in time, we may see that it just looks like another example of 2003.

Damo: Yeah. Which would be great. Wouldn't that be great?

Steph: Mm-hmm (affirmative).

Damo: But that's a great reminder too that the human being is incredibly strong. So keep that in mind. So, Steph, what are the things that you would say people could do to improve the health of their gut-based immune system?

Steph: Yeah, well, I think certainly fresh food is a big one. I'm probably preaching to the choir and repeating myself but it does really start with, obviously, a predominantly plant-based diet. So making sure that we're having a lot of fresh fruit and vegetables, and from a vitamin C point of view focusing on broccoli, and capsicum, and our citrus fruit, and our berries. So probably people are already doing that, but again, acknowledging those foundations I think and looking for how you can get those foods in every day would be my first step.

Damo: Sure. So why ... Obviously, I'm just going to keep asking you questions and then you can flip it and ask me questions too if you like.

Steph: Sure.

Damo: But with regard to fruits and vegetables, why are fruits and vegetables important? Because, obviously, people know that they're important but why are they important what's in them that make them special?

Steph: Yeah, well, specifically we were talking about containing natural vitamin C which is going to support your innate and your adaptive immune response, but when we link that further to looking at the microbiome, well, these foods are fibre and all of the research around that first point of call for a healthy and robust microbiome isn't a magic pill or a potion. It comes back to dietary fibre intake. And so in Australia, we're really used to relying on more refined carbohydrates like breads and cereals, and muesli bars for our fibre and they're going to be quite nutrient-poor because they have a high degree of human interference. So plant and, obviously, fruit-based fibre is the best thing that we could be doing to create this robust microbiome, but also to feed the anti-inflammatory microbes rather than the pro-inflammatory microbes which are fed by sugar and even too much saturated fat or too much protein.

Damo: Yeah, yeah. Absolutely. And I suppose the other thing I'll mention there too, Steph, if you don't mind is that the chemicals that make up the colours of these foods, which are known as proanthocyanidins, or carotenoids, or what's the?

Steph: Polyphenols.

Damo: Polyphenols. That was the one. Thank you. So these chemicals act as signallers or information packets to our own DNA and our gastrointestinal system to behave in a particular way, and so they signal our body to do stuff and it's important to understand that the more of that information that we get, the better because as our ... Let's take, for example, a virus. A virus comes into your body with a set of

instructions in its own DNA that when it attaches to your cell's DNA it takes over your DNA and then starts to manufacture proteins according to the virus's instruction book.

So it uses your cells to manufacture ... Basically it's like ... Easy to think about a virus in terms of what's happening in your computer. If you get a virus in your computer it starts to make your computer behave badly. It's the same as getting a virus in your body. It makes your cells behave badly and the thing that stops it are kind of like anti-viruses or sets of instructions to ignore stuff, and that's what these colourful foods do. They provide sets of instructions to help our cells behave more appropriately. So whether it's cell death, which is apoptosis, or whether it's cell replications, or whether it's repair, or whatever it is. That comes from our foods. So we want lots of that information coming from good quality food because the dead food, the stuff that's been highly processed doesn't contain those instructions, so then we rely on instructions manuals that are in our DNA already to transcribe. But if they're been taken over by viruses or poorly behaving cells within the body, let's say cancer, then we will start to have bigger and badder issues. So you want to have a lot more of this healthy food. Good quality stuff with lots of colours to provide the instructions for the way in which your body should be working.

Steph: Yeah, so well said. I'm a big fan of polyphenols. They reduce the inflammatory gene expression, combat metabolic syndrome which is what we've been talking about obviously. They're also incredible foods to help support our Bifidobacterium strains. So going back to those beneficial transient microbes that digest our fibre, but also produce vitamins and certainly low counts are linked to many chronic diseases.

So, yeah, the colour is important. So not only berries which are the obvious ones, but even things like black olives, nectarines, red onions, asparagus, I think green tea, black tea, artichokes. There's so many beautiful colourful foods that are going to be on our plate already but certainly that we can increase our intake of to make sure that we are getting a really high dietary intake of polyphenols.

Damo: Yeah, 100%. Couldn't agree more. And then obviously fibre being super important. Different types of fibre are really ... A broad range of your different types of fibres are really important for the microbiome for our gastrointestinal health and for the formation of our stool. So in the absence of fibre, our stools are poorly formed, and if that does take place, if our stools are poorly formed we run the risk of increasing the inflammatory markers. We run the risk of cell damage and we run the risk of malabsorption. So we want to make sure that we've got fibre to slow transit time down, and in some cases, speed transit time up to just make sure that your gastrointestinal system has all the of the opportunity to absorb all of the nutrients that we supply it through our food. So that's also really important.

Steph: Yeah, exactly. So eat more plants, eat more fruit. That’s step one.

Damo: Yes. For sure. And also let's just quickly talk about with regards to plants we often talk about resistant starch. So why is resistant starch important in this regard, Steph?

Steph: Yeah. So, I mean, it's incredible when we look at the digestive path of a resistant starch in that it's essentially resistant to digestion until the large intestine where it

can then be accessed by our beneficial microbes as a fuel source. So, again, encouraging the growth of the beneficial species of bacteria, the anti-inflammatory species that basically do form the bulk of our immune system. So they need food to stay alive and, obviously, the right kind of food just like humans can either determine whether they thrive or whether they can become more pro-inflammatory in terms of the metabolites that they release.

So we do need resistant starch which can be from vegetables like the cooked and cooled sweet potato or potato. Certainly can be found in grains like your white or basmati rice, even oats that have been precooked. Lots of different examples of resistant starch but I, of course, prefer the vegetable-based options but what I ultimately want is for everyone to be making sure they are including some resistant starch, if not daily then at least three to four times a week.

Damo: Yeah, great tips. Great points there. Appropriate proteins are really important too, aren't they Steph? And so, you can go down and get your pie from the local 7/11 and scoop out all the meat and eat that. That's one way of getting your protein but there's way better ways to get quality proteins, and of course, fish is important, chicken is important. Your lamb, kangaroo, beef, all of these different types of protein are really important. These are animal-based proteins. Are there many plant-based proteins per se that you would say are really, really important?

Steph: Yeah, well I think the legumes in terms of a category are often what's forgotten about. So, obviously, they're fibre, they do have a carbohydrate but we see them as being a protein. Certainly for our more plant-based clients and listeners they are so incredible for the microbiome. Every single person who tests their microbiome is probably going to be then told to eat more legumes. And, yes, there can be that whole digestive conversation because they're not always digested and absorbed well by everyone, but if you fix your gut then you should have a tolerance to an upper limit of legumes. So whether it is that you start with a small amount of chickpeas, or lentils, or black beans and you prepare them well. So rather than maybe just going for a can that you buy the real deal and soak them overnight.

Damo: Yeah.

Steph: Yeah, they're such great protein but, again, that fibre is going to be so important for the microbiome.

Damo: Yeah, totally, totally. Two things there. I'm up to about three lentils. I think that's what I can handle at the moment.

Steph: Oh, really?

Damo: So I'm getting there. I'm getting there. I'm getting there but the other thing is-

Steph: Damo, you need some gut testing.

Damo: No, no I’m joking, far out. Can fly my balloon with some lentils now. The other thing is when you say microbiome, I'm just going to bring everybody back. Every time Steph mentions microbiome, substitute immune system.

Steph: Yes.

Damo: Just bang. Swap it in., swap it out. So every time Steph or I say microbiome or bacteria, you know, guts, or probiotic just think immune system. Just plant that into your head so that you go, "Oh, okay. Cool, cool." We're basically saying the same thing. So where we would improve the health of the microbiome we're also improving your function of your immune system. So think about that too. That's a contextual thing.

Steph: Yeah, immune system. Absolutely. So really important to keep making that link. What else? I love resistant starch. I love legumes for the right people. Yeah, I think-

Damo: That's a good point. That's a good point you make there the right people and there's a greater understanding these days, Steph, too and particularly in the new medicine. Like the new healthcare which is what you and I have been part of. I've been part of the new stuff for 25 years. It feels so old to me but it is only new now. But there's a great enthusiasm ... I've actually lost my train of thought. Where was I going with that?

Damo: What did you say before?

Steph: Yeah, not everyone suits legumes.

Damo: Oh, yes. That's right. Gosh. I just had a senior's moment as I'm approaching old age. So we're saying that bio-individuality is really important. So just because you watched a movie that tells you to eat in a particular way doesn't mean that's the way you got to eat, and again, selecting foods based on what you're designed to be eating is really important and that's why practitioners can guide you in that direction. So, again, another little plug for Steph. Contact Steph via The Natural Nutritionist so you can actually be guided appropriately to the right sort of food, because the right sort of food for you could be different to what you think it might've been, and that goes down that line of ancestral eating which I really love the whole concept of ancestral eating, Steph.

Steph: Yeah, I'm with you and that's why it's usually an optional food. At least initially because obviously a lot of people are doing microbiome or immune testing out of curiosity. So that's one thing but there are a many others that are doing it because they've got some obvious symptoms. So I wouldn't be giving anyone a food that's going to give them a worsening of their symptoms or anything that they find quite triggering at the moment, but you can definitely put it in your longer-term plan to come back and test these foods down the track when your microbiome, when your immune system is more robust.

So we just need to be mindful of that because a lot of people walk around with signs on their forehead that says, "I never eat onions or I'm low FODMAP forever." And I have a problem with that.

Damo: Yeah, me too. Because it's supposed to be temporary. The whole FODMAP thing is meant to be temporary and when you go back to Sue Shepherd's early work. And I'm going to credit Sue because the big guys stole it form her. Let's be honest about

it. It's really Sue Shepherd's work. She did in her PhD and it just happens to be that she doesn't own it, but she's the one that founded it.

So, Sue, when she first found it realised that this was an issue and that it could be corrected, and this is really important to understand that the restriction of FODMAPs for a period of time is good to bring things under control, but then the reintroduction of these FODMAPs is also really important and that's why there's a program designed for it. So you do this under guidance. It's not something that you just go, "Oh, yeah, I'm FODMAP free." And you do that forever. That's not the way it's meant to be. You're meant to be able to bring these things back in so when it's done with someone who's trained to help you with that, like Steph.

Steph: But, yes. Using that as a sign that maybe there is an interruption in the microbiome with the immune system but then not forgetting that you really don't want to be eliminating whole foods long-term. A little bit of a side note but let's go back to what else we can do for our immune system. So you were talking about probiotics before, Damo. So what role do they play in terms of regulating the immune system?

Damo: Yeah, cool. Thanks, Steph. There's one other thing just before we go to there if you don't mind. I was just going to say these are things that'll be found in your food anyway, but things like vitamin D and zinc, as well as your vitamin C, are also really, really important. I mean, coming back to the herbs, we'll maybe cycle back to some herbs later on about that to help boost your immune system and different parts of your immune system too because different herbs do different things. So maybe we can go back to that, but I love probiotics, Steph, and I think you know that I love probiotics so much and our great friend, Kale Broccoli, he loves probiotics too and for me, probiotics are the future. These are the little guys that we carry around in such vast numbers that they outnumber our human cells by, I don't know, is it 100 to one or something like that? There's so many more bacteria in our body.

Now, probiotics are bacterial species that we can take, we can ingest and then they will signal different functions within the gastrointestinal system. Now, most probiotics when they get through the stomach and the gastrointestinal tract, they don't exist when they get through to the rectum, to the anus. So as we manufacture poo, that poo doesn't generally contain the strains of bacteria that we took orally. In other words, more often than not they die on the way through.

Now, you might think, "Well, then that means that they don't do anything." Well, that's also not the case because these bacteria behave in a particular way by signalling the epithelial layer of the mucus membrane, or other bacteria, or yeast, or parasites, or whatever else in the gastrointestinal tract to do certain things. So, for example, if we take the case of like the Lactobacillus rhamnosus, LGG which is one of the strains I mentioned earlier on. That particular strain will go into the body and it will signal the immune system, and will help to regulate an immune response that's governed by mast cells, but it also assistants in natural killer cell modification as well. So our other white cells that manage bacterial infection and other ... Oh my gosh. What a bad day, maybe it's time for me to eat some food today. What are the ... Antibody responses. So when we have antigens presenting. So when we've got our antigens being presented in our body LGG helps to modify the immediate response so it's more appropriate and I think that's also really important to keep in

mind. So that's one bacteria that's been shown to signal appropriately but you don't find it in the store. I'm going to take a drink of water, Steph.

Steph: That's all good. Yeah, I think, again, that's what we need to understand. So really looking at, yeah, learning more about probiotics I think is essential but our expectations for whether they're commensal strains, or transient strains and then what we can do to make sure that we're taking what we need to be. You know, whether it is prescribed or whether we're doing it at that therapeutic levels, or whether we do it via food or beverages.

Damo: Yeah. I'm back, I'm back. I just had that water and that was really helpful. It's so weird. This doesn't normally happen. You're right and it's better to get it through food in the long-term, but in the short-term when things aren't really good then a probiotic's really important and choosing a probiotic that is therapeutic, in other words, has a function is really important as well. So somebody asked me the other day what's my thoughts on a shelf-stable broad-spectrum probiotic and I said, "Oh, yeah. That could be fine." And they said, "Oh, are they ..." The values of bacteria going to be, you know, are they going to be good? And I said, "Well, the label claim is what you've got to be mindful of." So if it says that it's going to have 2 billion microorganisms or CFUs at expiry then that's how much it has to have here in Australia.

Now, if you're listening to this podcast in the US you'll have different rules. If you're listening to this podcast in the UK, different rules. Canada, different rules. New Zealand and Australia are the same rules. So if it says 2 billion, or 20 billion, or 25 billion, or 50 billion per capsule at expiry then that's what it has to have at expiry. Now, a shelf-stable probiotic will still have those bacteria. It may have slightly more and then it dies off to that level at expiry, or it may ... Well, that's basically how it's going to work but you don't get a bacteria that goes to sleep and then only becomes active in the gut, they're always going to be awake. My preference is to use refrigerated probiotics. That's my preference. I don't know why. Maybe I'm just, you know, set in my ways but I prefer to use that sort of bacteria.

Now, strain specificity is really important, and Steph and I both have access to bacteria that bring about functional change in the body. So to that extent, we can use bacteria to help with say irritable bowel syndrome, or inflammatory bowel disease, or allergies, and sensitivities like hay fever and foods intolerances and that sort of stuff. We can also use bacteria to boost your immune system and your natural killer cell response. So we can use those sorts of bacteria and they're called probiotics, but you can also get those bacteria in your maintenance phase in different foods and I think that's really important as well, and this is going to come from your fermented foods. So you might find some in some Kombucha, you might find some in kefir. You might find some in your sauerkraut and your kimchi. These here are important fermented foods that you can actually put into your diet to assist you.

But also some of the bacteria that you have existing in your body will signal other bacteria to proliferate if the food is good. So if you're putting the right foods in they will also grow as a result of the signals from other bacteria in your body. So probiotics are really important, but the food that fuels the bacteria is equally as important.

Steph: Yeah. I love it, I love it. So you do you want to go back to zinc, vitamin D, herbs? Because I think there's a lot more that we can be doing.

Damo: Yeah, there really is, isn't there? So zinc's an important mineral and we can get zinc through our food, but the reality is that the foods that contain zinc aren't really that plentiful and our soils in Australia aren't that rich in zinc. Now, it's interesting because plants will manufacture, they make vitamins. They don't absorb vitamins from the earth. They make vitamins and they also stimulate our body to make vitamins. So the only vitamin that we can't make is vitamin C. Everything else we can pretty much make when it comes to water-soluble vitamins. So B vitamins. As a classic example we make most of our B vitamins with our microbiome, our bacteria, but minerals our body doesn't make and we can't form minerals. So we have to get minerals from our soil and from our diet. So it's really important that we eat foods that are rich in certain minerals, and in this case, when we're talking about zinc, zinc's found in a number of different foods. So sunflower seeds or pepitas are really rich in zinc and so are oysters.

Actually, I'm going to tell you this story. The other day somebody, Steph, told me that they were told to take oysters on a daily basis because oysters had a therapeutic effect on the body, which I've got to look up and I don't want to talk too much about it on this particular podcast because I haven't researched it but they were actually prescribed by their doctor to eat one oyster per day.

Steph: Interesting.

Damo: I know. And I was quite excited by that but I will come back to you with why that is the case. Let's not reveal it on this podcast.

Steph: Stay tuned.

Damo: Yeah, stay tuned. Come back to the next episode of The Real Food Reel and you might hear that. With regards to zinc access, you'll get it through lots of different foods but those two foods are very high sources of zinc. Now, if you need to supplement with zinc then it's important to take zinc moderately to start with, because it can cause a violent evacuation of food if you've got enough zinc in your body. So you may have enough of zinc in your body but a little top up of zinc to assist your immune system's activity is not a bad thing to do. But the problem is that if you have enough zinc in your body and then you take some more zinc and it's just slightly too much you will vomit or at least feel nauseous. So it's good to be careful of how much zinc you do take. So I'd recommend that you start with five milligrams and maybe build yourself up from there to a nausea point. Do you do anything different in that regard, Steph?

Steph: Yeah, a lot of it is going to be based on blood tests, Damo, for zinc because, obviously, it is quite easy to test. I'm not telling anyone to go and get their blood test right now because we don't want to overwhelm the medical system, but I guess normally I'd be looking at a blood test result and working out what a client needs, but yeah, certainly prescribing it with food to avoid nausea and not jumping in the deep end is a good idea.

Damo: Yeah, totally. Absolutely. Yeah, don't jump in the deep end. It's not good because you will chuck up and it's always at the worst time, and there's always carrots. I don't know, we'll talk about that in another episode too I reckon. That'd be worth talking about, Steph. The other thing that we spoke about or that I dropped before was vitamin D. Now, I was watching an American program the other day and as the throwaway line this doctor on the America program said, "Now, I want you to take 10,000 international units of vitamin D and that will help." And I was like, "What? Did I just hear a medical doctor on television say take 10,000 IUs of vitamin D?" And I was like, "Wow, far out. That's incredible."

Because here in Australia, our vitamin D is limited to 1,000 international units per day in terms of our recommended daily allowance, and so that's the reason why the dosages that you can get are so low I Australia is because our RDA is considered to be low and there's also the assumption that because we have sun we can manufacture lots of vitamin D. But then the flip side of that is that we're told to stay inside and slip, slop, slap if we go outside. So we actually block our manufacture of vitamin D. So we need to get it from our diet. So oily fish, cod, salmon might have some. I don't know. I think it just really is cod and cod nipper, and halibut, and anchovies I think are the ones that provide vitamin D. Are you aware of anything else there that provides vitamin D, Steph?

Steph: Tiny amount in egg yolks, but it's not that easy to obtain in high amounts from the diet because it's a sun vitamin obviously, or a hormone rather.

Damo: Yes. Yes. Hormone, yeah, that's right. Vitamin analog, hormone and so I would take a supplement of vitamin D and I do. I've got a little bottle of vitamin D that I keep in my draw at work and when I start my shift I squirt a couple little drop into my hand just lick it off, then I wash my hand because of COVID and then I keep going and just start the day but I have my vitamin D then.

So it's a regular maintenance dose of vitamin D for me I take just to maintain an appropriate immune response, and I think that's a really good thing to do. Do you prescribe much vitamin D, Steph?

Steph: A lot and especially a lot now. The research around COVID-19's severity is significant. So in Australia, we use the nanomole per litre unit and less than 50, so less than 50 nanomole per litre is showing about a 50% increased risk of COVID-19, right? And so then your risk significantly decreases when you get to 75 and, of course, we tend to recommend someone's goal for their vitamin D is around 100 to 150 nanomole per litre, and that's where you have this absolute smallest risk of COVID-19.

Now, obviously, it's multi-factorial and there will always be other comorbidities that need to be factored in, but right now because, yes, it is a sunshine hormone or vitamin and we're indoors, and then two, at least in Australia we're moving into winter where that's going to be even more challenging. Not to mention how social isolation is impacting that further.

So I think it's important to have this conversation because it's not being had like the vitamin C conversation is. Everywhere in Australia basically sold out of vitamin C the moment everyone found out that it was beneficial to COVID-19, and so that was great because it is proving to be really important. Especially for the cytokine storm

and what's going on in the second half of the disease progression, but we're not talking about vitamin D enough and we're moving into winter and where I live it's nearly dark all day now. It's very wintry and while that might change not many people are getting outdoors. Especially because it's that window of between 10 and three that gets ... So 10am till 3pm that gets narrower and narrower as we get into winter. So then you have this small window of time to go outside at midday and no one's doing that one a regular basis with their arms out and their legs out. They're covered up.

Damo: More than that. More than that. You got to get everything out.

Steph: Everything out. Got to be nakeez (naked).

Damo: Everything.

Steph: ... And no one's doing that.

Damo: Yeah. No, it's too cold. It's too cold for us down here, us Mexicans but up north. I was looking and I was chatting with a friend of mine, Rabi, today on the phone and we did a FaceTime and we FaceTimed West Australia, Sydney, and Melbourne and Melbourne had stinking weather. West Australia was beautiful and Sydney was just blue skies, no clouds. I'll tell you what, Steph, I often question why we live in Melbourne. Seriously. Can't play golf and we've got bad weather. It's just something's not right. Anyway. Moving on from that hey?

Steph: But yeah, even in Queensland they're slip, slop, slapping. So that's the message. I grew up in Queensland and, of course, we need to be mindful of getting burnt and skin cancer, but having too much coverage will then impact your vitamin D levels as well. So it goes one way or the other depending on what side of the equator you live on, right?

Damo: Yeah, so true. That's exactly right. And as we go into winter, as you said, it's so much more different to manufacture vitamin D and it's not really that comfortable. As it gets colder you want to put more clothes on, not take clothes off. So you can get your vitamin D levels checked but it's way easier at the moment to get the COVID-19 check than a vitamin D check.

Steph: Medicare.

Damo: So you're better off just taking some, you know? Just go on and take some.

Steph: Talking about 10,000 international units. If we just go back to that point, I do think that's too much seeing as it's a fat-soluble vitamin and at the moment the research looks like we don't want a vitamin D level above about 200. People will say otherwise and I will be open to changing my mind when the clinical research shows us otherwise, but I do think it's a little bit too much to be on TV telling everyone to take 10,000 international units.

Damo: I know, I know. I think the same and I'm glad you pulled me up on that. The reason why I got excited about that is because it was a throwaway line, "Oh, you just take 10,000 international units." And for me, that was like, "Wow, mind blow that we're

now getting GPs prescribing what would be seen to be a large amount of ... Or medical professionals prescribing what would be a large amount of vitamin D in our terms." And I'm not afraid to mega dose for most things. So it was good but I'm glad you pulled me up on that and just reframed that for everybody as well.

With herbs, Steph, there's not many different herbs that can affect the immune system and sometimes you take herbs because you're having an immune challenge and you need a bit of extra stimulation or a bit of extra support. Sometimes you take herbs because you're trying to prevent something happening, and in this case, because we're talking COVID and in other words, we're talking viruses it's important to have an appropriate natural killer cell response. So for me, I've been recommending a number of different herbs. Olive leaf extract is a great extract of a plant to use. Like a fruit to use for our body to boost our white blood cells and help prevent viral load, or viral infection. Then the other thing that I like to recommend is andrographis, I really like that herb. It works really, really well to boost natural killer cell function and those two herbs I use a lot of ... And I also use mushrooms. So medicinal mushrooms I think have been shown to be hugely effective like reishi, shiitake, Coriolis, cordyceps. So there's a few different types of mushrooms that I would use in that regard. Is there anything else that you would sue from herbal perspective?

Steph: Yeah, no. They're my top. I love the a bit of astragalus for sure and I'm probably using, yeah, reishi and shiitake more commonly but it really depends on the client because if let's say you're taking C, D, zinc, and astragalus, and mushrooms it’s going to be really expensive and perhaps not that practical. So whilst there are lots of things that you can take it doesn't necessarily mean that you need to take all of them.

Damo: Yeah, that's exactly right. So basically what we're saying is there's heaps of different things that you can do to improve your immune system, but the primary thing to focus on is the health of your gut. Make sure that you're eating a really healthy diet because the diet is the foundation. That's what you want to build upon. Get your gut nice and healthy, decrease the amount of symptoms that you're showing and you're experiencing. Keep your weight appropriate. Be strong, be fit, move lots, drink lots of water and then you might take some supplements to actually improve things but don't use supplements as your stopgap. It's meant to be something that supplements a healthy lifestyle, a healthy diet. It's not the be-all and end-all. Don't make supplements your food.

Steph: Yeah. Yeah, absolutely. Awesome. Thank you so much, Damo. Was there anything else you wanted to add to the discussion today?

Damo: No, I think that's pretty good. I think it's just good for people just to keep an open mind around their gastrointestinal system being the source of the bulk of their immune system, or at least the bulk of their lymphatic system and just think about what goes in your mouth and be aware of how that affects your body. I think that's really important.

Steph: Yeah. For sure. Taking control back over your health and, yeah, focusing on what you can control will make all the difference right now. So thank you so much for joining us today, Damo, it was so great to have you on the show.

Damo: It's so great to be back and joining you again. Thanks, Steph.