Kiran Krishnan:

When your innate immune system responds to the presence of a pathogen... Remember, I gave you the analogy that it's like a blow torch response to dealing with mosquitoes. Right? You're going to kill the mosquitoes where you're also burning and damaging the wall behind it. So when the innate system responds, it's nonspecific. Meaning it's not responding to just one particular virus or one particular bacteria, it's responding to a region where there's a problem. And so it just comes in carpet bombs at region, which means that your own cells are also going to get damaged in the process.

Right. Now, one of the really important aspects of immune clearing, is that your own cells have to be repaired, and all of your own cellular debris have to be cleaned up. And there are cells that do that. There are cells that clean up all of that damage, but they have to be activated by activating G protein-couple receptors by stimulating interleukin 22. And all of those signals come from your microbiome.

Now, what happens if you don't fix the damage? Well, if you don't fix the damage, then all of your own cellular debris can get caught up and accidentally presented to the adaptive immune system as part of the problem. Right? Your macrophage or your dendritic cell may accidentally your own tissue proteins or your own tissue structures and present it to your T cells and B cells as the problematic or invading species. And then now you start developing autoimmune conditions. Right? That's how an infection can lead to autoimmunity.

That's what we're seeing in this pandemic virus is as well. People with long haul syndrome are seeing an autoimmune induction of their neurological system, their muscular system, and so on because there was so much inflammatory damage. And those individuals did not have a good, effective, clear repair and anti-inflammatory mechanism. And so their macrophages and dendritic cells accidentally presented their own neurological tissue samples to the B cells and T cells. And then they started developing antibodies and memory T cells against their own tissue. Right? That's called a bystander effect. Where your own tissue becomes an accidental bystander in the war, in the damage, and then accidentally becomes a target.

So in order for that to not occur, you need a healthy microbiome producing the anti-inflammatory signaling, producing the butyrate to activate the G protein-couple receptors on cell surfaces and stimulating interleukin 22 to repair the damage that's going on. That has to be happening as the infection is coming under control and as the immune system is progressing along towards the adaptive. Right?

We cannot overstate the importance of a healthy microbiome in that whole kinetic aspect of how the immune system functions. If you don't have a healthy microbiome, you have a huge risk of going down the road of a cytokine storm and going down the road of auto activation, and then ending up with an autoimmune type of condition as a result of that infection.