(00:00):

So that still, what we are seeing right now is that a member of our children are getting the disease. So isn't that contradictory on one hand side and say, you know, don't worry too much about the children because they are really very, well-protected provided they are in good health because they have that innate immunity. And then on the other hand, what you're seeing right now is that there is a number of children that are getting the disease. So is that contradictory? So here comes a very important point that it is critical to understand. And I will take my time to explain it to you in detail, because this is one of the most important things to understand, to get a sense of how this pandemic is evolving and why now all of a sudden our children who were at the beginning of the pandemic completely protected, didn't even develop any signs, signs of disease that now all of a sudden, some children start to develop disease.

(01:07):

So how can that happen? Well, the reason why this happens is the following when children or a person, any person that has asymptomatic disease. So asymptomatic disease may, uh, well, asymptomatic infection, you'll see, is it another disease? Because that is a contradiction in terms. So an asymptomatic infection is you get infected by the virus, but you don't develop symptoms or you develop maybe mild symptoms. You're not in bed, but you're not feeling well for maybe a day or so. It's not even preventing you from going to school or from, from doing your job. But it's, it's, it's very much so in that case, your immune system has seen the virus, but it has not really been primed to be called. Priming is when the, the immune system got the really well imprinted with the pathogen and the antigen so that it will remember this encounter basically for the rest of your life.

(02:15):

If there is only an asymptomatic infection that contact that encountered has been too superficial to induce this type of immunologically immunological memory. But what will happen is that nevertheless, your immune system will Mount antibodies. So I'm no longer talking about innate immunity right now, I'm talking about a kind of acquired immunity. So you Mount antibodies and those antibodies are amongst other, primarily directed against the spike protein. So, but because these encountered is very superficial, these antibodies or short-lived, they will disappear after a few weeks from your blocks. Basically, there are a number of publications that describe that after eight weeks, these antibodies are even no longer detectable. So that is one thing. Second thing, there is no memory, as I just said, and turn these antibodies have low affinity for the virus and they are not functional. They have not the capacity of neutralizing the virus, but there is a big, but here, but these antibodies can still bind to the virus.

(03:36):

And by binding to the virus, they can, to some extent, prevent your innate antibodies from binding to the virus. So in other words, your innate immune system is to some extent, because the short lift antibodies that you acquired as a result from a previous asymptomatic infection, these antibodies will compete with your innate antibodies. And to some extent, suppress those innate. So why is this so important? Now, this is important because during that very periods where this is happening, your innate immunity is suppressed. And as I was saying, the antibodies that you acquired or shortlist and not functional. So at that very moment in time, you are vulnerable because you're in immunity and the antibodies that you acquired or not functional. But I will say this is a situation that normally does not last for a long time, because after six or eight weeks, these antibodies have even disappeared from your blogs.

(05:00):

So normally for example, when the one stream was circling, I think a strain, which was not very infectious, that was not a problem. Why not? Well, what was the likelihood? What was the likelihood that you got infected with [inaudible] and that within six weeks thereafter, during the periods where you were vulnerable, you got re-exposed to that very same [inaudible] vibes. That likelihood was very, very low. Why? Because the strain was not very infectious. No, we are having, we are dealing right now with another completely different situation. We are now dealing with another pandemic, a pandemic of highly infectious variants. So the Delta Valiant in most countries, which is highly infectious, is the dominant strain. So highly infectious means, you know, that the likelihood that you get reinfected over and over again with this variant is much higher than in case of the original Bullhorn street. So now, if you are sitting on some short lift antibodies, as a result from a briefest asymptomatic infection, the likelihood that, you know, become very infected with this highly infectious variant within six weeks after your brief is exclusion.

(06:38):

That is to say during the periods where you're completely vulnerable, this likelihood becomes now significantly high. So that means is this Delta strain more virulent? Some people say, well, Delta three is more Vivian because milk, our children are getting the disease. No, no, no, no, no, no. The Delta, there is no selection of vigilant G there is no positive selection, according to genomic analysis of virulence genes. So it's not like the Delta variant has no selected, or it has mutations that enhance that increase the virulence of this virus. It is simply because people are reentering, are getting re-exposed to the virus. Do you bring this period of vulnerability? And that the likelihood becomes no very realistic and very high because per definition, almost of Delta value is a highly infectious strain. And that is very, very important to understand. And then I talked to my third bullet here, why is this well, the highly infectious Delta virgins, and also the gamma and the alpha and the beta existed already before the mass vaccination.

(08:07):

That is true. But what did change since the mass vaccination, whereas is the following medicine before the vaccination, these strains, these variants were not dominant. It was the [inaudible] was dominant, but they popped up and they were isolated from time to time, but they were not dominant. Now, all of a sudden you have the mass vaccination and what is the mass vaccination? The mass vaccination causes in fact, people to have antibodies, to have antibodies against the virus, but, and this causes, that is what we call immune pressure. So the immune system of not only one individual, but of the whole population get vaccinated, this immune pressure becomes higher and higher. And this immune pressure, however, is not sufficient to eliminate the virus because we know that these vaccines have not sterilizing capacity. They cannot block the transmission, but they put three men this pressure on the virus.

(09:16):

So now all of a sudden, of course, the virus is encountering a very harsh environment, an environment where the immune pressure is very high and not just in a few people, but in more and more people. That is what happens when we do mass vaccination across several different age groups. So now all of a sudden there's variants that were sporadically found an isolated or no, having a competitive advantage in comparison to the hand strain, why do they have a competitor and comp a competitive advantage? They have a competitive advantage because they are more infectious. In other words, they can more easily overcome the immune pressure that is exerted by the population. So they have a fitness advantage. And because of this fitness advantage, they can now start to dominate the [inaudible] strain

and they become more and more prevalent. So their expansion in prevalence becomes now more and more important.

(10:26):

So that is what mass vaccination does. Mass vaccination did not generate this, this variants, or it was not responsible for generating these variants. That what mass vaccination did is that it gave to these variants a tremendous competitive advantage. And because all of the population of large part of the population, uh, is involved of was involved the virus, this Delta variants managed to add that to the population. That's what we call adaptation. And because mass vaccination cost dominance of the more infectious Delta value and because a higher infection rates due to this dominant dominance of more infectious strains is of course increasing the likelihood that people after their first infection get to reinfected. And the re-exposed within a short term timeframe thereafter you during the time where you're still sitting on antibodies, that to some extent, out-compete the innate immunity, that is why they become vulnerable.

(11:39):

And that is very important to understand. So there is a number of, of, there is a dynamic that we know, uh, and, um, so it's not that innate immunity is failing. The innate immunity gets out competed by antibodies that are worthless because these function, these antibodies are not functional antibodies that they result from a previous, uh, uh, asymptomatic infection. So now luckily enough healthy children, they have high titers of dysfunctional innate antibodies. So there are antibodies despite the competition from the short lift, uh, no affinity and despite antibodies, despite this competition, they are still, they have still some capacity to resist this, this pressure from the specific antibodies. And, uh, that is the reason why, in most cases, children will, you know, despite despite the situation, despite the Delta, very uncertainty, I think we'll either, you know, still not have any symptoms or they may, they may, because of this partial suppression develop mild infection, uh, multi disease, and sometimes even moderate disease.

(12:57):

But nevertheless, when children are healthy, the likelihood that they are going to get severe disease, even with circulating Delta Valiant, when they have no underlying diseases is very, very remote. And that is why I'm saying why I was saying at the beginning of my talk, don't be afraid of, you know, of getting you, I mean, what's the point you, you are for one or two or three, or maybe maximum one week in bed. In the worst case, it is still normal. Uh, what is not acceptable, of course it's severe disease. So it is through that because of high infection rates, the cost by the Delta children may not develop mild or sometimes even moderate disease. However, provided they're in good health and have no underlying disease. It's highly unlikely for them to develop severe disease. Of course, it can always happen maybe one in 100,000.

(13:51):

I don't know exactly, but this is not a scenario that need to be taken into account. Uh, when, when considering the huge advantage, uh, of innate, uh, of innate immunity, individuals who recover from, uh, COVID-19 disease. Because even if children, but not, not only children, but any anybody, when you then still get the disease, but you recover from that disease. Well, then you have lifelong immunity also towards source code V2. So you have, you have acquired immunity, but a type of immunity of adaptive acquired immunity that is way better, more functional and covers a broader spectrum of variance than

the vaccine antibodies do. And this is not just my interpretation. This has been published a number of times in, in peer review journals that naturally acquired antibodies that you obtained as a result or on the recovery from disease, do a better job than the vaccine, all antibodies in a sense that they are, have better functionality and that they can cover a number of different values.

(15:09):

So, uh, last with regard to this slide, children that are at risk because they do have, for some kids, children do, of course have underlying diseases. They must receive early multidrug treatment. I mean, there is no doubt about is how can you, somebody who you know, is at risk, not provide with appropriate medication, which is, uh, which is which exists right now, which, which is well known, which is safe, et cetera. I'm not going to expand on this, but, but, uh, people like Peter McConnell, et cetera, I've done extensive work on this together with a number of colleagues that make it very, very clear that this is a disease that can be treated and people who are at risk or children, for example, what at risk they should receive, uh, this, uh, this treatment when needed. So now what happens with innate immunity when children grow up, can they still rely on it?

(16:07):

Well, there is now, and this is also something which is fantastic news, but again, this is not new. It just that this type of science got completely ignored because vaccinologist, they're not interested in innate immunity because they vaccinate. And when you vaccinate, you immediately start to induce acquired immunity. You bypass this whole chapter of innate immunity where it is now since many years unambiguous evidence that innate immunity can on top be three-inch. So what does that mean? Well, it means that children at birth, for example, they have a lot of innate antibodies and these innate antibodies also to say naive, they can recognize several different pathogens, but they are not split. They have little, little, very little, or almost no specificity. So what happens is that when children, for example, get infected, their innate immune system can start to some extent to remember this infection, because especially when they get mild disease.

(17:16):

So what does that mean? The virus can be neutralized right away by innate antibodies at the portal of entry. When that happens, it's like the innate immune system or the immune system has not even seen the virus. You had innate antibodies, the virus, you know, came into your body and it got immediately neutralized. But, uh, in when that is not the case, the virus can still get into the epithelial cells. And when the innate immune response is sufficient, these cells, as I initially, will be killed by natural killer cells. But that is a kind of signal to the innate immune system to do better. Next time around it's like innate immune system is saying, wow, I was lucky that I had my encase cells because otherwise the virus would have broken through my innate in unity. So the antibodies now get trained in a sense that the cells that are secreting these innate antibodies, they are now trained to, to produce antibodies that have a little bit higher affinity for this particular virus.

(18:25):

So that next time around the neutralizing antibodies can do a better job because they bind with higher affinity to the virus. And hence the likelihood that this virus will now get into cells. So that, uh, as last resort, you have to commit in case cells to eliminate the virus infected cells that this will no longer happen. That is to really so open the re-exposure to the same, or even a similar pathogen, the cells called drained and they know produce protective, innate antibodies, that acquire memory. So they can

remember the virus. So you could say, well, if that is the case, if they have become more specific and they, the cells, these are B cells have now acquired memory, then it's the same, like the adaptive immune system, like the acquired antibodies. No, it's not the same. It's still like, uh, in between the naive innate antibodies and the adaptive immunity in a sense that the antibodies that cook trained, we will still, and that is important.

(19:35):

We will still be able to recognize also other viruses, other pathogens. So they got somewhat higher affinity for the pathogen that they were challenged by. But it's not that this is if this city is now so specific that they will not recognize other pathogens. So they, they conserve what we call the poly reactivity. It just that they are better trained when next time around this virus gets into their body, that it can more readily be neutralized thanks to the innate trained antibodies. So thanks to their higher affinity, the straightened eight antibodies will be more effective at neutralizing soft skull V2, while still able to recognize a multitude of different other Corona virus, including all the variants. So see, that is the beauty of the innate immune system. The innate immune system not only recognizes all kinds of different variants of [inaudible] to recognize all the Corona viruses.

(20:38):

So thanks to the innate immune training, the unvaccinated healthy subject, of course, including children will improve their protection from SASCO. We do. And also other Corona viruses, they are trained in it. Antibodies will better resist competition from this low affinity spikes specific antibodies that were acquired a previous infection. So remember, I will say the previous slide. Well, there is still these threats from the Delta arrogance that's children or anybody who got previously asymptomatic infection get now reinfected within a short period of time. Well, if your antibody scoped range, your innate antibody scopes range, they have higher affinity for the violence. So that means they will more easily embedded with stents, that competition from the shortlist antibodies that were acquired as a result of previous asymptomatic infection. So that is why we are gonna see that as the pandemic evolves, we are going to see that more and more children and more and more people who got previously symptomatic infectious and maybe mild disease are now going to be completely protected against all these kinds of variants.

(22:01):

And, and because this is a system that has memory, this is in fact something that will apply for the rest of their life. So this is, this is quite revolutionary. Well, I, I wouldn't say news. This is something we know that this is the way innate immunity works. It just that innate immunity does not protect you. It is all kinds of different viruses, but here we were dealing and we are dealing with a virus where the innate immune system can do a fantastic job. And we just picked the completely wrong approach, which is to induce acquired antibodies. That by far have not the capacity that innate antibodies has.