Introductions and Personal Origins

Hi everyone. I'm doctor Sanjeev Goyal and today I have Doctor Hans Vink and Bob along with me. We're going to talk about this amazing new technology and, a whole new science about the, the endothelium.

This our micro vasculature of our of our body. But before we get into that, maybe I just want to talk. I wanted to ask them to introduce a little bit about their history, how they got involved in this field.

Because I think it's quite interesting. And, so go ahead, doctor Vink, please welcome. And please tell us a little bit about how you got into this, this area of science.

Well, good afternoon or morning. Or the goal. Very nice to meet me. You'd be on your show. Well, the way I get interested in this is really know. A long time ago, more than 30 years ago, I started looking with big microscopes, living tissues to to see with, you know, big magnifications, how blood flows through the smallest vessels from the micro circulation to through capillaries, where red cells flow through one by one.

And when I entered the field on the, late 1980s, early 1990s, people for the first time realized that these small little vessels almost appear empty is a big puzzle.

Why, only very few red blood cells are present in the small vessels? Well, the estimates were that only 5% of the volume of those small vessels were filled with red blood cells.

And it turned out, you know, to make a long story short, that a lot of the low numbers of red cells and the dynamic changes in red cell content are mediated by a transparent protective protective gel called the glycol calyx that's inside these micro vessels.

So when I started this, my first, challenge was to identify and find evidence of this transparent, elusive gel. And then after a couple of decades, having imaging technology developed to visualize the like, okay, let's demonstrate.

It's important for microvascular health. About that time, I started developing a glycol checked medical device to measure the health mica surface and glycoprotein in individuals at that time.

But in 2012, I met ball when I'm working on a therapeutic based on dietary supplements to increase the health of the like of calyx, and micro circulation. So.

So we formed a dye team to work on both the medical device and the supplement together over the past decade already. Okay, so that's a good point for Bob to jump in.

Well, thanks, Hans. It's nice to be with you today. My interest came really well, my interest in the endothelial glycogen collection. I didn't even know what it was.

In 2009, I had a personal health scare. I, I was traveling all over the world. We had a large automation and controlled business, and then we ended up selling it.

To the largest, electrical device company in the world in France, Le Grand. So I had, some time and some money on my hands, but in building that company, I had been traveling around the world quite a bit and really burning the candle at both ends.

And where I live is kind of up in the mountains in Utah. And when I would hike, I would feel a kind of a tightness in my chest and that concern me. I had been diagnosed as a type two diabetic probably a year before that.

And, you know, that's one of the early warning signs. They tell you that, you know, that's going to lead to cardiovascular disease. So when I went in for my annual physical, I told my doctor, who's actually a personal friend of mine, but, you know, I was experiencing and he said, well, you know, obviously that's not good.

I want to get you into a cardiologist. So he immediately called a cardiologist that was a friend of his. And he said, well, as luck would have it, he can see it today, I want you to go down to the Utah Valley Regional Medical Center and see him.

So, you know, I was like 9:00 in the morning. So I figured out, I'll buzz down there, I'll talk to him for a few minutes and I'll be on my merry way. Well, that's not what happened at all.

So he came in and talked to me with his, physicians assistants. They got my medical history. Check me out. Took my blood pressure, did all the normal things, and then they said, well, probably be the reason you're having that tightness in your chest is you've probably got a blockage in one of your arteries.

And, you know, I'm the reason I'm here at the hospital today is I'm in the cath lab and I'm doing, angioplasty. And, we're putting stents in patients.

So explain that process to me. And he said what I really think we need to do. And they came in and did some preliminary testing and they said, you know, we don't know for sure.

The only way we can know for sure is we're going with a little camera in your groin. Back in those days, we'll go up in and we'll be able to see. And if you have a blockage, we'll put a stent in.

And so not at all what I was expecting to hear that day. I hadn't had a heart attack. There was no sign that I'd had a heart attack. There was nothing in my blood.

He just wanted to do this as a precautionary thing. And so bottom line is they did the procedure, as the last procedure of the day because I wasn't in an emergency, of course.

And I still remember, you know, you're not completely out when they do that. And I remember that really bright lights. And I remember hearing the music really loud.

But then I remember when the cardiologist came in and they told me so they I've got good news and I've got bad news. What do you want to hear first? And I said, don't tell me the good news.

And he goes, well, the good news is you didn't have any blockages. We didn't have to put a stent in. That's all. That's great news. So what's the bad news?

And he goes, well, we don't really know what's wrong with we don't know why you get that tightness in your chest. And so then he proceeded to write out, you know, some prescriptions, blood thinner, hypertensive meds, you know, 3 or 4 different things.

And then and I said to him, well, how long have I got to take these medicines? And he says, well, probably the rest of your life.

What the Glycocalyx Is and Why It Matters

And as I drove home that song, Kian. And the more I thought about it, I guess you could say in a way it made me mad and it made me mad because they didn't really know what was wrong with me.

But yet they had done this what I would term an invasive procedure. And in my my previous life, for 28 years I had been in the financial services industry and I had built a very large insurance and investment agency, and I knew what impact this procedure would have on my future insure ability for health insurance and life insurance.

So I wasn't pleased that I had even done it, to be honest with you. But then to find out I didn't have anything wrong with me made me even matter. And so we had just sold that company at the time.

And so as luck would have it, I had time and I had money, and I was really good at looking up stuff on Google, and my radar was up really high because I wanted to find out what was wrong with me, because they couldn't tell me what was wrong with me.

And so, as luck would have it, I started researching and I was introduced by a friend. His brother was a doctor, and he had introduced me to some information.

That was what I came to learn. It was had all been done by the science of doctor V. And so I started reading and became and became, I guess you could say, almost obsessed with trying to find out 12 or 13 years ago, all I could about the handle vaguely of like, okay, Alex.

And it was one of those things where the more I studied it, I came to believe that was what was wrong with me. But yet nobody knew about this. And as I started reading some papers and stuff, I also got the idea, and as I understood more about the endothelial glycol collection, that it can break down.

And that's what leads to inflammation and all the things we've talked about on your, show today. But, but basically, it became clear to me that that was probably what was wrong with me.

And that's also probably what was wrong with millions of people around the world that they had the same thing happening, but nobody knew what it was and nobody knew how to diagnose it.

And nobody had a solution for it. And so it was kind of, for me, you might say, a lightning bolt moment in that, oh my gosh, this could be the big thing that you ought to really spend your time on.

And so I became an expert and I got the idea where I live in Utah, most people don't know what maybe they do is pretty much the nutraceutical capital of the world.

So there's a lot of nutraceuticals that are developed here. And I have a lot of friends that had developed nutraceutical companies. And even though that wasn't my primary interest or what I've done previously, I had a lot of friends that had been in that industry and had been very successful, and I personally had already always taken supplements and tried to do the best that I could for my health.

So I was a big believer in natural products, you could say. So I got the bright idea. What if I could go out in the world because I believe that God created everything on the earth for man's benefit?

And I thought, what if I could go out and find the plants or the sources that you could take in your diet that could restore and rebuild, you're like, okay, surely they've got to be there.

And so the first tip I got was I looked at where, where are people in the world the most healthy from cardiovascular killer events. And, you know, you look at Japan, there's pockets in Japan.

And so I started looking in Japan and I became aware of that. There was a type of seaweed that was available and that the Japanese consume. And also I became aware that this type of seaweed in an extract has some of the same characteristics.

Or it may be like what the glycol calyx is made of. So that was my first tip, that maybe a type of seaweed or an extract of seaweed might be important in restoring the glycol calyx.

The next area that I looked at was the Mediterranean back in 2009. The Mediterranean diet was a big, you know, here everybody was talking about, you know, the reason they live longer is because they eat a diet high in, polyphenols and, you know, grape, you know, it's all organic.

It's all fresh fruits and vegetables. And so I started looking at, and I was introduced to a product that had just come on the market, and actually, I was the first one to use it in the formula that I formulated, and it was an extract of 27 fruits and vegetables.

And, the idea was that would be a super antioxidant. And my thought with that was that it would stop the oxidative stress. And so that was the first product that I ever developed, and that was back in 2011. And and so at the same time, I had been reading all of Doctor Irving's papers and I came to believe, he is he's the guy that proved to the world what the glycol calyx even looks like.

And you can probably get him to show you some pictures on the show today. But I got this bright idea because I was following him, and I've read all of his papers and it published like 107 papers.

So I got the bright idea I could jump on a plane, I could go to the Netherlands. And I knew he had just gotten the patent issued on this medical device.

It was a camera that you could put under your tongue. And I thought, you know, rather than be an admiral, he could tell me if I was on the right track.

And so that's what I did. And that was about this time in 2012 that we met, and I went over and told him my health background, and he said, well, you know, big American, you guys love your cheeseburgers, your fries and your coke.

So don't expect that you're going to have a good score. And so he tested himself and he got a really nice result. See I'm just like a healthy 18 year old.

And then it was my turn to get measured. And he measured me. And then, he looked at it and he pointed at the screen. And then they measured me again. And then he was talking to the other guy that was there in Dutch, and I said, well, what did you find?

Am I good or I'm bad? And he said, I'm really confused. He said, your results. Not at all what I anticipated. He said, your score is actually better than mine.

And that's not what I would have expected. You and I hadn't told him up to our point, and we'd been meeting all day. I hadn't been I hadn't told him we had been work.

I had been working with my team on a product. And I said, well, what part of the real reason I came here today? And I didn't tell you because I wanted to see, first of all, what your device was in.

Second of all, I didn't want you to be biased. I wanted you to test me without knowing what I was doing. And, I created a all natural product that targets the glycol clicks.

And that's when he said, well, Bob, do you realize, you know, up until now, I've spent my whole career. I had to prove to the world that the glycol calix was real.

Then we had to figure out an imaging tool so we could measure it. We had to figure out what its physiological function was in the body. And then everybody always asked me the same thing, because I can measure and I can get a score, and I can tell them how big the glycol calyx is as a systemic organ.

But then they always ask me, so what do we do about it? And, and he got a little emotional and he says, Bob, do you realize I've tested drugs? I've tested a whole bunch of stuff, and this is the first time that maybe, maybe you've discovered this or what?

And so we started talking that day clear back in 2012, and we decided that if we joined forces, we could both accelerate what we were doing and bring something totally special to the world that didn't exist.

And that would be an imaging device where we could noninvasively measure a person and we could get a baseline score. And not only could we tell them the systemic health of their endothelial glycol calyx, but we could also tell them how functional their micro circulation was.

So we started working together. I actually became the CEO and managing partner of glycogen at that time with Johns at the university. And then we joined forces and, worked on a new supplement based on the things he knew.

And we put our minds together. And then we were able to use that, like, object to help us understand what worked. And then we were able to use some scientific techniques he had used for years to evaluate things and how they would affect the glycol calyx.

And that's how we came up with endo, the product that we offer now. And we filed a patent on it that was issued in the US in 2018. It's it's been issued in, Japan and South Korea and soon bee interest, I think issued in Canada, for example, European Union, China, all kinds of places.

So that's how we came together. Kind of a long story, but I guess, we your own health is a big motivator. And if you want to make a difference, you know, first of all, I wanted to fix myself.

But second of all, I knew this was a big hole that nobody was focused on, and this was a story that needed to come forth and be told to the world. And that's why I convinced Doctor Vink to join me in this journey, to not only bring these two products forward to edge, but to educate the world on the importance of the micro circulation and the role at the end of the of like the calyx.

So that's how we can maybe this is this is great. I mean, I'm so glad you guys have met because you're really changing. You're changing everything of our whole understanding of the micro vasculature.

So, doctor, doctor Vink, can you just tell our viewers, okay, maybe in a lame person's term, what is the end of what is this like? Okay, what does it look like?

You know, why is it there? What is it doing? Maybe show some pictures that would help. Can I show a couple of slides? Can you see my screen? Yeah, it looks great. Okay.

Are you just a few slides? Just first point I want to make clear. You understand, is that most people, if they think about the vascular system, they know the image on the left, they know the heart and the large arteries taking a blood to the organs, and then all but the large veins connecting the blood back to the heart, or what most people don't know.

If you take a microscope and look more closely, you'll see that you know, close to any tissue cell in your body. We have these microscope small vessels where the blood is really thick and close to every tissue cell there where all the oxygen and nutrients are being supplied to the tissue and where the waste products are collected.

So actually, 99% of all the contact area between the vascular system and the tissue cells is in those small vessels. Large vessels is only 1% of the total surface area.

Well, if you go into those small vessels, what we realize now and I'll come back to this little bit later. So if you look at one of these individual small vessels, you see the individual red blood cells going through it.

How GlycoCheck Measures Microvascular Health

Realize that in healthy small vessels, the red blood cells, they never touch the inside of the festival. There's always a significant gap between the surface of the vessel wall and the center, where all the blood is flowing.

And so we wanted to know what's in between that space, and then let me zoom in just a little bit more. Just to give you an idea, this is even larger magnification with an electron microscope.

Again, a cross section, one of those micro vessels. Now you see here a large magnification on top would be where the red cells are flowing. This is the vessel wall.

And on top of the vessels that the surface of the festival, you see all these bush like structures, all these blues like structures, all these hair sticking out.

It's a huge three dimensional mesh of all these hairs, which are polysaccharides like heparin sulfate and hyaluronic acid that's being produced by your endothelial cells at the line, the inside of your vessels.

And actually, these bluish like hairlike structures, they bind a lot of plasma proteins. And that's actually a lot of fluid forming a very stable gel.

And the gel, it's very thick, you know, it's ten times thicker than the end, the film itself. And it protects your endothelium. And then make sure the cells don't touch the wall, don't stick so you don't lose and you don't leak a lot of your proteins, and you prevent inflammation and you prevent, coagulation disorders.

So, guys, that's, that's just to show you how it looks like. And one more slide is summarizing all of the important functions that we have been able to study over a couple of decades, with many other groups.

So on the left hand side, again, you see that hair like structure forming a gel on the inside of your vessels. And now we know that any function of your endothelium that we know is important, like sensing how fast the blood is flowing and telling your endothelium to stop producing nitric oxide.

What you need those polysaccharides to tell the endothelium you need to start producing nitric oxide. Also, the antioxidants that we know are important to balance the oxygen radical levels, like superoxide dismutase.

They specifically bind to these polysaccharide structures of life. Okay, so they need to be closed and bound to click okay. Likes to capture the oxygen radicals that are produced little close to the vessel.

And then again, leakage of plasma proteins and fluids is prevented by click okay. And the same for red cells also blood platelets and also the inflammatory cells, the leukocytes, the monocytes they cannot touch and stick to the wall as long as there's a healthy glycol exchange between.

So a healthy glycol to protect your vascular system and prevent all. And make sure all these functions are preserved and prevents unwanted coagulation and prevent unwanted activation of your inflammatory system.

So that's it in a nutshell. Yeah. So in essence corrosive. You know, that's a very, important aspect. You know, in larger vessels at the branching point of larger vessels, you know, there's always the same spots over and over again.

We're SS corrosive starts, and we know exactly at those spots because of the very complex flow profiles and those branch points, there's very little glycolytic production goes like, okay, production is stimulated by the forward motion of the blood flowing.

So those sites where F of corrosive starts have a very thin like okay, compared to the rest of your vascular system and those sites because of your very thin like okay, Alex, you have the first sites where cholesterol will start leaking into your vessel wall where platelet starts thick and causing coagulation problems where leukocytes start sticking, causing an inflammatory problem.

That's where the lesions start growing, because that's a very defined area with very small like acrylics, which make that part very vulnerable compared to the rest of your vascular system.

And but in the microvascular small capillaries is the same thing happening that we see in the big vessels. Like are we also seeing like blockages or it's like what happens what happens when the, glycol calyx gets damaged.

Yeah. So, at the microvascular system way before you see, problems in the larger vessels, when glycol calyx gets damaged and it gets damaged by exposure to all the classical risk factors that we know of, like smoking, obesity, hypertension, elevated glucose levels, elevated insulin levels or genetic predisposition.

So when glycosidic starts breaking down at the microvascular level, a couple of things, start happening. First of all, you start losing many of your small capillaries.

So very tiny spots of tissue will be deprived of access to capillaries. And when metabolism goes up, those sites that are a little bit farther away from the capillaries will get and they'll starve, you know, micro like lots of tissue starving, building up over the years and at some point will cause organ dysfunction.

But it takes years to build up. And together with losing many capillaries and like okay, Alex's damaged you also will lose is the dynamic response of your microvascular system to changes in blood flow.

When we start exercising. So if you have a healthy microvascular system, what the hell Steve. Like, okay, Alex. Well, if you start exercising and blood flow goes up to your muscles at the same time, also, it's like, okay, the volume goes down, allowing more blood volume to diffuse through more capillaries.

That's a much more efficient delivery of nutrients and oxygen through your muscle cells. So when Black organics breaks down, that dynamic response disappears.

So you have fewer capillaries and then blood flow goes up. There's no matching increase in the blood volume at the microvascular level. And no benefit for the increase in blood flow.

Because now the only thing that happens in a fixed number of a small number of capillaries is that the flow goes just faster, so the few capillaries that are left.

So at the very early stage, being exposed to these risk factors, you lose many capillaries. And the adaptive response to flow changes. And you're causing all kinds of micro spots in your tissues or tissue that will be dying.

And over years the organ function will be compromised. But that doesn't show up in organ function until, you know, a later stage when the damage is pretty, pretty damaging.

So how much early? Like, let's say, you know, I've heard about these studies where they autopsied, like, you know, at 18 years old and they saw already beginning of atherosclerosis happening, like from your studies with the glycol check machine.

How early are we seeing changes in the glycol calyx? Damage? Very early. We just completed a study, 900 healthy individuals. There's an obesity study there.

We compared people with low risk to medium risk to high risk based on their Framingham risk scores. So, you know, taking into account whether they're smoking, their body size, you know, the classical risk factors, but these people are still very healthy.

This is years before they will develop organ problems. Already at this early stage, if we look at individuals, with an estimated risk of cardiovascular event of 20% or higher compared to a low risk group with less than 10% already at this early stage, the high risk individuals lost about 50% of their smallest capillaries.

So this years before anything will show up in terms of a heart attack or stroke or diabetes, or other glycation disorders or inflammatory disorders. So I'll say a decade, maybe two decades before the organs really start this functioning.

You get major, major problems, early changes at the microvascular level already show up, and it's gonna be identified. And you can already be supported by, you know, the products like both mentioned, like and.

Okay, Alex, specifically designed to help the health and support the health of those capillaries at an early stage before weight, years before the damage or cause organ dysfunctions.

So for let's we always heard and learn in medical school and all that. Diabetes is a microvascular disease. So is there an impact of these sugars on the Glick okay Alex I'm just curious what's the connection there.

Yeah. So, you know, it's at a very early stage or at early stage of type two diabetes and the blood glucose levels go up and insulin levels go up already at that stage before there is obvious vascular issues.

If you look at the micro vasculature, we see that both the high glucose in combination with the high insulin cause a lot of glycogen looks damage. And we see that you lose already know about 70 to 80% of your Michael vasculature.

You know, and the remaining capillaries are highly permeable. But also you lose the again, the, the the dynamic response. So we know it's okay. At the early stages, you lose a lot of capillaries.

But you keep infusing all of them all the time and keep your low baseline levels at an acceptable level of number of perfused capillaries. The soonest there's a meal challenge or an exercise challenge, and metabolism goes up and blood flow goes up.

There's no matching increase in a number of blood perfused capillaries, so block volume at the capital level stays constant at a low level. And you know you start building up all kinds of issues all micro spots in the heart, micro in the brain and the kidney will start being damaged.

And one of the interesting fields that we have been studying for a long time is a diabetic kidney problems. And we also see that in the kidney, the very early stage when glycogen is damaged in the kidney, Michael vessels the glomerular capillaries.

EndoCalyx Supplement and Early Study Results

You see that like, okay, this is actually the determining factor that prevents leakage of your albumin protein out of the vascular space into the ordinary space.

And as soon as the albumin starts leaking, causes damage to the capillaries and the filtration units. So the common light in the kidney will they'll die one after the other.

And over years you start losing kidney function. But as soon as you start noticing kidney function is compromised already years of damage, behind you.

And, you know, then it's a challenge to get that back up, but up again and, you know, try to stabilize or improve your kidney function in those diabetic patients.

So I want to ask, Bob, you were the supplement and. Okay. Alex, what is this? What is that? Like, how successful is it with actually repairing? Like, I imagine maybe preventing damage, but what is the studies looking like with actually repairing?

Like, okay, Alex has been damaged for let's say years. What is that? What's the. Well, that's that's a fantastic question because that's, you know, that was my original target or goal was, you know, what, if we could go out and find those natural compounds and we could find him and put him in either, kind of extract rate or make sure we had a good molecular weight that could get across.

And and by the way, there's a big like, okay, Alex, in your gut, in your gut plays a big role in your health is, you know, you know, that's where 70% of your immune system takes place.

And that's also where the nutrients have to get processed. But more importantly, they have to get across that

barrier in the gut, which is really a type of glycol collects.

And it's thicker, to get into the blood to get delivered in the first place. And so that's what we spend a lot of time on. And, we've actually done a lot of studies, both maybe.

Hans, if you don't mind, you've got some really good slides, some pictures. Maybe you could just show the results. That might be the most useful thing to show you what we've been actually been able to show, not only in, dishes we can show.

We can immediately restore it. We can show we restored, take diabetes, diabetic mice, turn them in. Take healthy mice. Tournament, diabetic mice ruined their kidneys.

We can show we can restore their kidneys back. And then we just finished a four year double blind placebo study that the Dutch Kidney Foundation paid for.

And we can show you some results on that. And then we've also been looking at know we published a big paper, a month ago in, critical care on sepsis. And, you know, in the fall, we published a big paper on Covid 19.

We're in the middle of this picks up this patient, and then we got this onslaught of all these people with Covid that were coming into the ICU. So we thought, well, let's see what's happening to these patients.

And, you know, sure enough, those sickest patients with Covid 19 lost up to 95% of their capillaries. So they were worse than themselves, especially when someone's acutely ill or has an acute trauma like an insult to the gut.

Okay. Looks like you said smoking, perhaps a very bad high fatty meal or an infection are these things that are transient, and then the body comes back to 100% within six hours?

I'm just what is the what is the science on that? Yeah, that's that's about the time course that we see happening. If you have an acute challenge that's transient.

It takes about 6 to 8 hours. To recover, let's say for a fatty meal or in the early days, we did some acute challenges of inflammation and health insurance or smoking.

Let them smoke like five cigarets in an hour. It was a very acute, intense challenge that, you know, damages a lot of your clinical colleagues. But, you know, you're first of all, repairs and rebuilds, microfluidics by itself.

You know, if it has time enough to do that, it takes you about, you know, six, seven, eight hours to do so, to take care of that. If you're constantly exposed to challenges all the time, you know, there's not enough time to rebuild and you all have chronic damage, right?

And then infections, you know, they they attack the glycol calyx as well. So like, I know, you know, I've been I'm fortunate I have a glycol check so I can test myself every day multiple times if I want.

But, you know, I developed a sinus infection. I think it started as allergies, then went into a cold, but ultimately evolved into a sinus infection. And I could see it did, in fact, impact like, like okay looks and my microvascular health score.

And I think that's part of the reason why you start to feel that systemic, you still feel good everywhere in your brain starts to feel foggy, all that stuff.

So that's all related back to that infection was attacking your lack of clicks. In fact, Hans and I both noticed even just a simple thing like going to our dentist and getting our teeth cleaned aggressively.

Later that day you could. You'll even start to feel like you start to have flu like symptoms because they've released all that bacteria. That's an insult to your like, okay, let's and it takes a couple of days for that to recover from even

just that simple thing of cleaning your teeth.

Believe it or not. Yeah, they do say that. Yeah. After there's, like, bacteremia that occurs after, teeth cleaning. Yeah. It's like it's like this massive release of all this bacteria.

Right. So if I did, you want to show maybe some stuff. Just answer this question. Yeah, sure. I can show a few data slides on how and would that be healthy first, like Felix and maybe if it's okay.

Can I also show it? Yeah, it could also show a little more couple of minute video to explain how we do the measurement with it, like a check device. All right, all right, there we go.

Hold on. So first a little bit about the climate check system how it measures the health of the like vascular system. What's your health score. The score that identifies if you're at greater risk of the most troubling diseases and conditions.

The score that signals that these diseases and conditions may be silently developing inside your body. The score that will help you understand how your body is alerting you with several early warning signs.

For the first time, you're able to get an overall health score with a new, simple and noninvasive test called glycol Check. It's a new patented technology, and the tests can be easily performed in a health care practitioner's office.

Glycol check gives you and your health care provider the one single number. A microvascular health score that alerts you in trouble could be lurking deep inside your capillaries.

The good news is that even if you have a poor score, you can easily improve your health. While you may look healthy on the outside inside your microvascular system, a completely different situation could be unfolding with the discovery of a transparent lining in your capillaries, called the glycol calyx.

Your health could be declining because that lining may be breaking down and becoming leaky, which can contribute to the advancement of many diseases that develop over time.

Aging, poor diet, lack of exercise, genetics, stress, and smoking can cause the glycol calyx to break down. In the past, there hasn't been a way to peer deep inside the microvascular system to observe the breakdown of the glycol calyx.

But now, for the first time, with glycol, check, it's possible to see live movement of red blood cells as they travel through micro vessels. Glycol check was created out of the need to measure the microvascular system by world renowned researcher Doctor Hans Fink.

Doctor Vink began his intense study of the glycol calyx in 1989. Over the years, he has received many research grants and prestigious awards, all focused on the discovery and breakthrough understanding about the importance and clinical implications of the glycol calyx.

He has authored or contribute to hundreds of scholarly papers and reviews. Glycol check works by simply placing a video microscope under the tongue for a few moments to video, record, analyze, and objectively report a single overall microvascular health score.

Glycol check counts the number of blood vessels and capillaries and measures red blood flow concentration. It also measures flow rate and different how deeply the blood cells penetrate into the protective glycol calyx.

Gel lining, a sign of deterioration. Glycol check combines all these important measurements together to generate a single systemic microvascular health score.

Lower scores indicate greater risk to the health of your organs. As the test is becoming more available, it can be administered in a health care practitioner's office.

Each test includes a baseline score and video of the microvascular blood flow, and tracks how over time, the microvascular score declines with health deterioration or improves with therapy.

Today, there are more than 85 ongoing clinical studies in locations worldwide such as Duke University, University of Pittsburgh Medical Center, VA Hospital of Salt Lake City Children's Hospital in Philadelphia, the University of Oxford, Harvard Beth Israel, Leiden University Medical Center, Steinhardt Diabetes Center, University of Exeter, and dozens more.

These respected research centers are all using glycol check to confirm that a damaged glycol calyx contributes to several diseases and conditions, as well as the resulting complications from diabetes, stroke, septic shock, obesity, cardiovascular disease, hypertension and other diseases with glycol.

Check now you can be tested and get the score that reveals the overall health of your microvascular system. With the results of your test, you will be in a better position to apply therapies and nutrition that can improve your microvascular health score.

For more details about glycol, check. Well, I guess that was a good introduction. How we measure with the camera. Now we get all these live, live images.

And based on that, we can measure, you know, the health of your micro vasculature. How degrades by being exposed to risk factors and how the, the clicks therapeutic can help you to improve the health of your micro vasculature.

So just a few things about the supplement. It's a patented supplements. Actually. We've got a methods ethanol method on that. And mechanics is actually a composition and a treatment method to improve the health of your endothelial tank.

Okay, Alex. And as we discussed, it basically consists of three main compounds. So we have the polysaccharides that are in the seaweeds that are almost identical to the polysaccharides in those hair like, which like structures of glycol calyx.

So they will immediately fill in the holes in a damaged leg. Okay, Alex. And also scavenge, important enzymes that bind to the polysaccharides. And you can prevent those enzymes to break down like a calyx even further.

We've also mentioned we have the antioxidants. It's specific antioxidants that bind to, like, okay, Alex. And scavenge radicals and prevent further damage.

And then the third compound is high dosages of glucosamine, because we now know that glucosamine is a rate limiting, substrate for the endothelium to produce more like okay, Alex.

So with that, you know, we did several tests and studies. This is just an early study showing if you measure the level of glycol helix damage, before and after taking, starting taking. And.

Okay, Alex, you can actually monitor very closely how the level of like, okay, Alex diminishes in response to taking in the calyx. Another acute study, was on the, protective effects against acute inflammatory challenges.

So if you look, the vascular system and we infused this is a smaller venue and we infuse every few seconds saline solution, you flush out the blood and you can see in the background those little transparent cells, which are the inflammatory cells.

And as long as they're rolling, they they're good or they're checking whether the festival's healthy. But, you know, as soon as they think there is a damage and then they stop rolling, they stick to the wall, and that's causing the local inflammation.

Now, if we count the increase in level of inflammation by counting the number of sticking, inflammatory cells to the

wall in response to a challenge, or you see the, the red columns show in the untreated vessel, if you damage the medical vasculature by breaking down, click okay, Alex, that, you know, within 30 minutes, there's about a 300% increase in the level of inflammation.

Well, if you take and okay, Alex, it protects your vasculature. And even though there's a slight initial increase in the level of inflammation upon the acute challenge, it can fully protect your vascular system.

And you're like, okay, against further inflammatory, damage in an acute setting. Well, we have the example, of, you know, study that we're doing in kidney patients.

This is the same kidney patient before and after taking. And okay, Alex, for four months. So you don't need a lot of computing to see on the left. Oh, you have very few capillaries.

And there's very low level of blood flow, a low blood volume in the micro vasculature. After four months, there's a very significant increase in the number of capillaries and the level of blood flow in the micro vasculature, as an example, that actually new capillaries are formed.

I mean, we kind of used to think this or is it just that existing capillaries are opened up? Well, no, it's actually in this stage, there's a, this balance between the production of more new capillaries and, and the breakdown.

So you have a very low number of capillaries all the time, because the breakdown goes faster than making new ones. And what the end. Okay, Alex does and by rebuilding your work like okay, it protects the existing capillaries against breakdown.

So there's more time to make more new capillaries. And you shift the balance towards more capillaries being produced and surviving longer. And, so the net effect is that you will have more new capillaries that stay healthy and functional for a longer time.

So the balance is more towards more production of new capillaries. Instead of, you know, breaking down the existing complex to fast. So it's this new capillaries, and actually by making more new capillaries, you also will have the, the, the luxury to have a few of those capillaries not being used at all times.

So you can also build up the reserve capacity. So, you know, if you have only a few capillaries, you don't have a reserve capacity. You use them all the time.

All the capillaries you have, if you build more capillaries, well at baseline conditions you will have more capillaries and more blood flow. You will also be inside exercising or metabolism increases for different reason.

You have a reserve number of caterpillars that you can actually recruit when necessary. So both are happening after the, and okay, Alex, therapeutic.

Clinical Applications in Kidney Disease, Wounds, and Blood Pressure

Well, this is just showing also in the same individual, if you look at your microvascular health, that individual started with a low Michael faster health score.

And after three months, the score was going up. Then he ran out of product. So he stopped taking the therapeutic score, went down again, and then a second time again.

After two, three months, the score went up significantly as a result of rebuilding. Look like okay, Alex. And getting higher numbers of capillaries. Now at the same time, we were able to measure kidney function in the same individual and showing that this individual started out with a very low level of kidney function.

So this is the filtration rate and the filtration rate in milliliters per minute. So this 30 meals per minute is the low end you know close to complete kidney dysfunction.

And again with rebuilding your microvascular function improved and went down again when the patients stopped taking the therapeutic. And then the second time or filtration rates went up to 7080 meals per minute.

So the not only is stabilized this is incredible. So this actually triggered a lot of support from the kidney Foundation and the Dutch government, supporting a large clinical trial that we just completed.

To see also earlier stages of kidney damage, if we could stabilize and prevent the real breakdown of kidney function. But this was a patient. But then it got trial been completed. The newest.

The new. The clinical trial has been completed. The data has been analyzed. The paper is being finalized, so it'll take it a little bit longer for the paper to come out.

But, you know, we are very happy about the results, so I cannot share too many details yet. But, you know, we're very hopeful at early stage that the therapeutic is very effective in protecting and improving the health of your micro vasculature.

Well, just the same for everybody. Sorry. Just jump in there quick. Well, no, that's a good question. So the, the good thing about using the classic device, we all start out with the same dosage, but you can actually monitor the effect on your microvascular health and you can increase the dosage.

You need, you know, a more potent, therapeutic. So the baseline, dosage is about four capsules a day. If people are really compromised, we advise to start with eight capsules a day, and we actually, we can monitor how effective the increase in microvascular health is depending on the dosage and the challenge you are facing.

This is just another example. This is a person with a diabetic ulcer showing an open skin wound in the lower limb that didn't heal. And you know the you see the tissue color changing and becoming really dark and all blood perfusion in the wound and the lower limbus getting very close to being amputate it.

You know, starting taking in the calyx already. After a few weeks, you see that the, the color of the tissue inside a wound starts increasing, showing more blood perfusion, more reddish color.

And after 3 to 4 months, it's complete recovery and the wound started to closing. Well, an additional observation that it's consistent in many other case studies is that this individual had an untreatable level of, hypertension of 200 to over 110.

All the conventional therapeutics did not have any impact on the blood pressure. And within a couple of weeks, we noticed and we were doing a lot of follow up studies right now on the hypotensive effects, blood pressure normalized within weeks, 226 over 70 and stayed constant consistently at the normal level.

Just to follow up, we did some animal studies, which I'm going to show you some of the results. So comparing, you know, in mice now young mice to all the mice.

And you know with aging you lose a lot of your medical vasculature and a lot of damage to your glycogen helix. So the microvascular health score goes really down.

And you know, the same old mice taken for eight weeks, you already saw a very significant improvement. The microvascular health, in these animals you see also with nitric oxide production goes down with aging.

And actually within eight weeks, increases to a almost normal young mouse level. This is, gut inflammation that, nitrous oxide. How does the, glycol clicks increase?

Nitric oxide? Can you just help explain to me? Well, what is it really? Yeah. One important, mechanism by which your your own Michael vasculature and you're in the cilium is triggered to produce more nitric oxide is by being able how blood flows over the service of your endothelium.

So if, if healthy and the thallium blood flow goes up in the cilium, senses, the increase in blood flow, and then like, okay, let's tell your endothelium to start producing more nitric oxide to dilate and make sure the shear forces there do not get too high.

Well, you need a healthy like okay. Like for that it's like okay. It breaks down. Both flow can be really fast, but you're and the ceiling doesn't sense.

It doesn't produce nitric oxide. So by rebuilding you're like okay. Like you rebuilt the sensor when you first of all to detect changes in blood flow and failure in the cilium to produce more of your endogenous, nitric oxide levels.

So that's, you know, that's what this. Yeah, sure. Go hard question on that is about the respiratory system. Is there any connection I need to mention the gut.

But with the cilia of the respiratory system like this. Like okay Alex, is there something similar happening. Well. And system no, it's it's similar to the cilia.

Also, our shear stress responses, and a few studies that I was part of. It's a long time ago we noticed that the cilia are actually had sides of very low shear stress and think like, okay, so they are able at those sites to sense of shear stress.

But the other side where there's high levels of shear stress like okay, legs will be abundant and covering the cilia and acting as the main shear stress sensors.

So they, they, they, they team up to take care of both the low shear and the high shear regions to make sure you're and the cilium actually is able to respond to the shear stress changes.

Well, a few more on this to, to get back to you. So, improvement of nitric oxide in older mice with the improvement of aerobic acrylics. Also the, the gut inflammation levels.

So we measured the accumulation of inflammatory cells in the gut goes up significantly with aging by repairing your microvascular and gut like, okay, links and all those levels of inflammation go back to normal, low levels, as in the young mice, similar as in that one patient with the skin issues.

We see that in the mice our blood pressure drops by 25%. Yeah. In old compared to almost within the calyx. And we are doing some pilot data which we have been collecting in humans.

So these are just voluntary case reports of individuals with hypertension showing how they respond to click. Okay. Alex. So all these are just averages of a few of those case reports.

So systolic blood pressure is going down from under 65 to 125 just in weeks. Similarly for diastolic pressure is going up going down from 100 something to two, close to 7580 mils, millimeters of mercury.

So okay with that? Well, I'll just show you 1 or 2 more just to finish up this. This is just a a proof of concept study that we did, early on when we were developing the and okay, Alex.

So these are healthy individuals for a section of the general population. So that baseline, we normalized their microvascular health at the hundred percent and over time.

So this is after two, three, four months, you see very significant improvement, a 50 or 60% improvement of their microvascular health. And still, increasing.

It's not plateauing yet. So we are we we designed the study to stop after 3 or 4 months. But as you can tell now, the longer you taken. Okay, Alex, the better the improvement of your microvascular health will be.

We think we think that, I mean, Covid, the death is caused by poor oxygenation, hypoxia of tissues. Right. So is it

not potential that the end to end.

Okay. Alex, could be helpful in the acute phase of oh yeah, you're you're spot on. It's almost like we shared my slides already with you before So we just we just finished, very, very exciting studies on Covid patients.

And as people have been reporting, we actually could confirm that Covid really, hits your Michael vascular system. So we looked at Covid patients in the ICU and compared, relatively healthy Covid patients that did not need mechanical ventilation with, really sick patients that are on mechanical ventilator.

We show Daniel, the ones on the mechanical ventilator, they lose already up to 95% of their Michael fast picture and their usage levels, of, like, acrylic damage.

And if you measure the level of, like, Felix damage, it perfectly predicts the outcome of these individual patients in the ICU. So ones with the relatively healthy Michael vasculature and look like Felix.

If we do follow ups in the ICU, 100% of them survive. The ones with the really significant damage of glycogen to Michael vasculature, the longer they stay in the ICU, the smaller their chance of survival.

And, correlates very closely with the number of organs failing not only the lung, but the kidney, the brain, the heart, very similar. There's another study that we did on sepsis patients.

So the more damage to your Michael vasculature and kidney, the more organs will be affected and start breaking down. So again, the next step obviously would be to test would and okay, Alex, you know, as early as possible can help you protect against the virus attacking your endothelium and breaking down your like acrylics.

So we are actually, as we speak, designing a huge international trial. Do as soon as people get a positive test to see if we can actually help them protect that Michael fast, Richard, from breaking down, but also and maybe even a more important people that actually, are cured from the infection.

You know, I know many of them, for many months later, all kinds of complications, Covid syndrome. I had a patient just tell me. Yeah. Two months. He's still feeling unwell.

Yeah, yeah. So we see we have, look, with the lack of check system and quite a few of these, people recovering from Covid. Yeah. And there's a huge level of microvascular damage.

So you can imagine if all your couples break down. Oh, your, your fatigue increases, your kidney function goes down. So high risk of heart attacks and brain issues.

So very looking like forward also on the longer term to see if we can help these individuals repair and rebuild the micro vasculature, if we can help them recover much faster from that challenge.

Wow, my mind is blown. But I want to come back to Bob. I mean, I asked that question about the omega three, and now I think I may have an answer myself, but I want to I want to hear what your thoughts about this.

Well, you know, I mentioned to you that I've always taken lots of supplements, and so I've been taking omega threes for a very long time.

COVID, Sepsis, and Future Consumer Access

When I had my situation. And so, from what I can tell, testing with the I could check and I've tested, you know, lots of people to get their baseline score that take omegas.

I don't think Omegas target specifically what we're targeting. Yeah. With the end up killing supplement. So you know that there's still, you know, there's lots of studies and there's lots of things that talk about omegas, but from from my from my view.

And I've tested lots of people, you know, with lots of different types of omegas that they've taken. And I don't see that it makes a significant difference in their microvascular health score or more importantly, in their, microvascular density or the thickness of their glycol calyx.

And so that's that's what's so unique about what we created is we're targeting specifically this function in the body, and we know what causes it to break down.

And so we had to go find those ingredients and make sure that they could be absorbed. And then they're targeted to do a specific thing as Hohns was explaining to you.

So even in talked a little bit about the antioxidants that we put in, but the seaweed that we chose actually. You know, what happens is happened is one of the enzymes that actually attacks and breaks down the glycol calyx.

Well, what we've learned as part of this four year study that we just completed with and okay, Alex and kidney patients is doing the pharmacological analysis both.

And we did it in animals. In humans. We learned that, it's 100% heparin Ace inhibitor. So not only are we restoring the okay, let's the dose level that we've got stays in the blood.

And it is a 100% help relationship. Bitter which prevents the glycol collects from breaking down. So you know the mechanism of action. That's why we were able to get the patent.

It's the synergistic action of the compounds working together as a method to treat and restore the endothelium. Like okay. So that answer your question.

You know, that doesn't I think what I, you know, people think that it looks like like the import of the seaweed. I'm thinking about an a diet perspective now apart from the supplement is that we sometimes take this.

We think it's one aspect of, let's say marine food that would be healthy, but it looks like there's so much more that we don't understand and that there's so much that we don't understand.

And we've been on this journey together, since 2012. And what I tell people is, you know, we really feel like we're Lewis and Clark, and we, we left on a journey from, you know, the middle part.

And we're trying to find where's the Pacific Ocean. You don't know what's in between. And so, you know, the benefit we've had is we've been able to put the like a jack into, you know, well over 125 academic research hospitals.

And then we collaborate and we've gotten all of this research data on pretty much any condition or disease you can think about in the body. And that's what we spent the last ten years doing, is getting all of this, reserve of information to clearly show when the, like, okay, like it breaks down, that it leads to a breakdown in the density or the number of capillaries you have, which then starts that spiral of organ starvation.

And so, you know, if I had a dollar for every doctor that it told me, man, if I would, if I could have had this the last time I've been wishing I had a device like this, because it would be so nice to see what's happening to a patient before they show up in the ICU with a heart attack or stroke.

But you know, there was no way to know. And so this is it's really the canary in the coal mine that's going to give a health practitioner a much better idea about what's happening.

And as you say, it's very complex. It's not. The diet has an impact. One of the early studies that we did, we did a study just because we wanted to see the impact of food.

So we we did. We had the group of people all eat the same diet. And then we fed them a high fat, high sugar meal. We gave them a quarter pounder, a large fry and a large Coke.

And that's that's what happened. And then we tracked the people and different people. They recovered different time frames from that high fat, high sugar challenge.

But, you know, that's where we learned that the average recovery time is, you know, five to maybe some people took longer than eight hours. And, you know, that was an indication as we were validating that their microvascular health was poor.

But then it was validated even by how the food they ate was processed. You know, so things like, you know, Hans talked about exercise, all the things that you talk to your patients about.

Everything has an impact on the, you know, even the altitude, the air we breathe. You know, we've even had people take it like a check up to very high altitudes.

And to see what effect altitude has, I'm like, okay, so, I mean, everything you can think about has an impact on this internal regulate. It is the largest organ in your body.

If you stop and think about it and it's it regulates all kinds of stuff. You know, it's another thing you think about how how the body communicates its negative and positive charges.

You know, well, the glycol collects as a negative charge. It's the grounding mechanism for the body, for example. And so that's why you got to have a really strong like, okay, let's just you know, you know, what happens in a house if you, if it's not grounded, you get sine waves and all kinds of miscommunication and burn up motors and all kinds of stuff.

So okay. That's you know this is amazing. Again I think this will open up a whole new world for me and the viewers. Where can they go to learn more about the glycol check.

I mean this is obviously something that's in doctors offices or research institutes and the supplement and. Okay. Looks well, so glycol check. Until just recently, we only offered it to, research hospitals, but we're just now coming out with a version that will be offered to medical clinics like yours.

And you're fortunate I put you on the list so you'll be one of the first ones to receive one. But, they can go to glycol check.com, so it's just like it sounds glycol ecom glycol check.com.

And there's videos and we explain. And if they want to do a deep dive if you've got doctors listening in there's I think over 70 I don't know what we're up to 75 or 6 peer reviewed published papers across across a wide range of diseases, all, showing you the the impact of a decreased, microvascular system and that microvascular health score.

The other place they can go to to learn about endo calyx would be to go to, microvascular.com. And that's the website there. And we offer endo collects there.

And then I know you're located in Canada and we just now are getting the supplement. You have to get it approved so we can import it into Canada. And I think by the end of the month, I'm hopeful we'll be approved in Canada.

And then it will be available from, physicians like you and me. And then we have an auto fulfillment program. They can buy it when they come into your office.

You can put it on your website, and they can sign up for autoship and will fulfill it from our warehouse in Canada. You know, that's that's amazing. When to consumer when to consumer device coming for Geico check.

Is that coming because I can just imagine that one would want to be able to check this all the time and see the impact because they, you know, why wait for the doctor once a year?

I would that'd be quite difficult. No. So you're you're you've read my mind. So the first thing we had to do is we had

to get all the validation and the clinical studies, and then we needed to bring it to the doctors.

So it's following along the same path that, you know, blood pressure cuffs or glucose meters or a lot of the things that were originally done in the doctor's office.

Now consumers don't want to know, and there's a lot of them can do it in their home. So, what we're doing right now is we're taking our software and we're putting it up into the cloud, so it becomes software as a service.

And then all of that data will be stored up there on a HIPAA compliant way to protect the privacy. And, and then the new we have a brand new camera that you'll be one of the first recipients of.

And then we're working on a consumer version of that camera and an app, and then people will be able to use their smartphone as the, screen to see, you know, that what you saw on the screen, you'll be able to see that on your phone, and then you'll be able to send it up to the cloud.

And in a few minutes, we'll send you back a report, and then we'll have an app and it can mesh. We'll have to work to mesh with all the other health apps that you have on your phone.

But you're absolutely right. This is going to have an impact on consumers because, there's a lot of people that track the blood pressure. They track their glucose levels, they track their, you know, they track their cardio, you know, variable heart rate.

You know, I track all these things myself with my smartwatch. And then I've got a couple other little things I do. You know, I want to know what's happening to me.

And so this is one of the key elements. And so you're very intuitive. I think this will become a part of every person's annual physical. It's just as important, maybe more important, to know this than even your glucose level and your blood pressure, because this is what's implicated in what's happening in those two areas.

Right. But then, it the other thing, it's it's a huge opportunity is when it comes to peak performance and health performance in individuals. So we have actually tested the professional endurance athletes.

And there's a huge difference that we can measure even in the function of their endothelial glycol. And that's going to impact how well they can the oxygen level.

What's going to affect what's happening to the muscles when they get under stress. And it also has a big impact on their recovery time. You know, how stiff they get and how quick they can get back to action.

Because not only are we delivering all the nutrients, the oxygen and hormones, you think about it, we're moving all the waste in the CO2. So it's that whole cycle needs to be at optimum levels.

So yeah, there's going to be a there will be a consumer version. Yeah. This is very exciting. Thank you so much. I really appreciate your time guys. Thank you doctor. Doctor, Thank you. Our pleasure.

Thank you, thank you. Okay.