REVERSE ALZHEIMER'S SUMMIT

# Protein Folding, Why It Is Critical To Cognitive Function And How It Can Be Improved

## Dr. Heather Sandison, N.D. interviewing Rowena Gates

**Dr. Heather Sandison, N.D.**
Welcome back to the Reverse Alzheimer's Summit. I'm your host, Dr. Heather Sandison and I'm so pleased to be joined today by Rowena Gates. Dr. Gates is a principal at Eng3 Corporation. She helped launched Eng3's NanoVi technology and currently oversees business development for its use in health, regeneration and performance. You can see why I invited her. Rowena has been a serial entrepreneur since 1995 when she co-founded one of the earliest companies to offer an internet-based solution to the logistics industry. Rowena received her PhD from the University of Washington for her work on international strategic alliances and regional economic development. While her collaborative approach remains, her focus has shifted from the economic well-being of regions to the health and wellbeing of individuals. Rowena, thank you so much for taking the time. It's a pleasure to have you here.

**Rowena Gates**
It's nice to be here. Thank you for inviting me.

**Dr. Heather Sandison, N.D.**
So I want to understand, just reading a little bit of your bio, this isn't a transition that most people make from economics and logistics to Alzheimer's and also understanding kind of the mechanisms of cells. You were in a very macro world and now you're in a very micro

world. So what is your personal story and how did you become interested in this particular topic?

**Rowena Gates**
Well, I really, it evolved, I said I'd help the company initially. And I got so involved because it helps people. And when you help people, it's so much more gratifying than when you deliver international trade documents. And so, I didn't mean to stay, but I did. And now I've been involved for a long time and I find it fascinating. So I study a lot of my own and I kind of come up to speed, but I'm not medically trained, obviously.

**Dr. Heather Sandison, N.D.**
So what about Alzheimer's in particular? Do you have an interest in dementia and cognitive function, whether it's declining or getting better? Tell me a little bit more about your interest there.

**Rowena Gates**
Well, the cognitive function is personally just a fascination for me. As you know, what was learned in the last 20 years is so stunning. How people learn, how the brain performs and so on, its always been like a hobby almost. And so then, the dysfunction is just the other side of the coin. And I think like you, the goal is to prevent it and to reverse it if it happens so that its not been a specific target of mine, the disease state has not been, although all diseases are of interest to what we're doing because they tend to be related to oxidative stress and that's a big factor for what our company has been addressing for a long time.

**Dr. Heather Sandison, N.D.**
So one of the themes throughout this summit has been the relationship between what we can see in the eye and the way that the blood vessels in particular in the eye relate to what's going on in the brain. So can you talk about these connections? Help us square the circle between the eye Alzheimer's and neurodegeneration?

**Rowena Gates**
Well, the eye is a very heavy user of oxygen. And the brain, which weighs about 2% of your body's weight, uses 20% of your oxygen. And so they are burning pot basically. And when you burn oxygen, you have oxidation and oxidation can do oxidative damage or oxidative stress. So they're highly connected in that regard. And additionally, the brain is made up of lipids that are very susceptible to oxidative stress damage. So it's not only burning the oxygen right there, it also is vulnerable. And so these are aspects of it sort of connect the brain function with the eyes, which are also very, you can measure things like mitochondrial function in the eyes because they're so sensitive to damage an oxidation and such bigger users of oxygen.

**Dr. Heather Sandison, N.D.**
So oxidative stress is this set of biochemical concept. It happens biochemically, but I feel like for a lot of us it's very esoteric. Like, what is oxidation oxidative stress mean? And so just explaining that, reactive oxygen species are made in our body in kind of like inflammation. These are good for us in certain amounts and in the right place. But it's when we don't get enough exercise, don't get enough sleep, when we eat the standard American diet, these builds up these reactive oxygen species and this oxidative stress starts to accumulate and it causes damage in the system. So can you describe a little bit more of how, like, your understanding of that concept?

**Rowena Gates**
Sure. Oxidative stress is really, that occurs when the damage outweighs your body's antioxidant defense. And that's why people are so in nutrition and so on. And it's so important to make sure that you have a good defense. But when you have too many toxins, poor nutrition on and on, then the damage from free radicals outweighs what your body can cope with and it accumulates with oxidative stress damage. And I think, virtually every disease has oxidative stress implicated in it. Any chronic disease, they're all age-related, that's all related to oxidative stress. And the way that relates to what we do is, they're all related to protein activity, which you'll hear me talk a lot about and I probably should tie

together for people because we tend to think of salmon as protein, which it is. But I'm happy to walk through how that kind of works together to create the proteins I'm talking about, which are the proteins in the body.

**Dr. Heather Sandison, N.D.**
Yeah. So you basically with NanoVi have a product that helps to protect proteins and helps to regenerate proteins that are damaged by oxidative stress. So when we think about oxidative stress, what the concern is, is that as it accumulates, it starts to cause damage in the cells. And are there ways, I think you had mentioned some eye markers for neurodegeneration that essentially represent what's going on. So when these proteins are misfolding, when they're misshaping, when they're not quite functioning right, it means our cells don't function right.

**Rowena Gates**
Correct. And there's so many proteins in there. The cell is tiny, but there could be five to 10,000 proteins in there plus the mitochondria and all the other stuff components. So it's kind of a crowded place. Since the body burns oxygen, all the mitochondria uses it. Well, the oxidated damage, it's like exhaust from the engine of the mitochondria. So all those cell components are vulnerable. So really you want an antioxidant sitting right there to interrupt the free radical and everything's good. And so, if you don't have that occurring, then what gets hit? Well, the proteins are really handy. They get hit and so does everything else. And so, that damage, it's so important for the cell to repair it and all the repair work. Nothing gets done without the proteins. All the repair is also done by the proteins. So, you don't want some cascade that, the proteins are damaged so they can't fix things and so on, that's a downward spiral. That's why you want to keep your health all of these great protocols for making sure you stay strong and avoid those negative spirals. is one of them.

**Dr. Heather Sandison, N.D.**
Right. That negative spiral leads to complex chronic disease. But it also, what's hopeful about this is that, you can spiral in the other direction as well because there is a cascade,

because the proteins kind of, they're responsible for a healthy function, but they're also responsible for repairs. So if you can support protein function, then you get better repair and you get better function. So you can take it in both directions that they start to layer on top of each other.

**Rowena Gates**
And we want to focus on the good direction. I couldn't agree more and I don't believe, I believe the body just has unlimited capacity to heal itself. And part of the trick is to get out of the way. Don't bombard it with chemicals and things that interrupt that ability. But I've just seen too many things that are absolutely remarkable that people can regenerate in ways that were almost unknown. And so, I think it's so important to stay on those positive spirals, but understanding that they are spirals so you might take awhile to get it started, don't expect it overnight. But once things start clicking into place, then you've got that spin that can happen in the right direction.

**Dr. Heather Sandison, N.D.**
And this is the mechanism. This is the reason why it's so important to do those foundational pieces. And then on top of it, if we can do the NanoVi and get that additional support. So, improving protein function is particularly important in dementia. And part of this is because of, tau proteins and beta-amyloid plaques are essentially these misshapen or misfolded, that's one interpretation of sort of what's going on. There's also the interpretation that they're there to support you because they're anti-microbial. But in effect, they're causing neurodegeneration and they are proteins, tau proteins. And so, proteins in particular are of special importance in dementia and Alzheimer's. And so, can you speak a little bit to what's kind of going on there with the sequence of events that leads to disease?

**Rowena Gates**
Yeah, yeah. There is a protein that's, they're all there for a reason, it's called amyloid precursor protein. So just, it has about this is where the story about the amino acids might be helpful. But generally, the proteins are made up of amino acids that are strung together.

And later, I can talk about how that relates to food, if that's helpful. But for now, that APP protein has about, I think it's 771 amino acids. It's a big long chain. And what happens is that there are enzymes that will break it down and that's what's creating these pieces that are amyloids and they can have anywhere from 38 to 42 proteins. If they have 38 or 40, we don't really care that much. If they have 42, they stick together. And so when they stick together, they form the plaques. And that's why with genetic testing, they'll be looking for that as an indicator of early Alzheimer's.

It doesn't mean you're gonna get it, it just means you wanna keep everything else going. And on that side, if I can just sort of interrupt myself a bit here, but I was listening to a cancer stem cell seminar last night I was invited to. And the doctor I had a great comment where your genes are the alphabet, I'm sorry, the DNA is the letters in the alphabet, the genes are the words, the genome are sentences. But that does not create the book of life. The book of life is everything else. It's how you string the sentences together, make paragraphs, do punctuation. All of that is epigenetic. That's your piece. That's where you help people and it's also where we help people.

**Dr. Heather Sandison, N.D.**
And people help themselves.

**Rowena Gates**
How all of that works is epigenetic. And it's many times more important as a factor than the genes, the actual genetic component. And so, that part of it where the proteins will function better is just a huge factor in Alzheimer's. So even if plaques are starting to form and so on, there's also your brain's ability to work without certain things online. It can work around things and it can repair to a certain extent. And so the key is to arrest anything that's going on, reverse what can be reversed and certainly not let any further degeneration. But all of that is dependent on the conditions that are in the body and the, what's available to work with and repair.

**Dr. Heather Sandison, N.D.**
So, what makes you feel that protein folding is at the frontier, at the very, spearheading medical research?

**Rowena Gates**
Well, it's the biggest focus in medical research right now because where you and I, I believe take the approach that you want to improve the system. You don't want to override it, you want to make everything better. And by the way, for these proteins to work, they rely on things like calcium or zinc or magnesium or whatever. So you have to have the right stuff in there so that they can do their jobs. And so, we look at what's missing, let's get that in there, what's in there that shouldn't be there, let's get that out, let's make everything work better in the whole system. Where, the medical science looking at proteins, they're trying to create a synthetic protein that will go in and do something specific. And most of the drugs we currently have are related to either initiating or interrupting a protein. Something like 70% of them already are looking at that.

But when they can actually predict the folding of the protein, then they have a model and they can create these things so much more precisely. And they have to figure out what they need to, what's doing what, which is highly complicated. So, just so people understand, estimates are 500 to a million different proteins. There's a lot of them in there, but we can name less than 50,000 of them. So it's not like we know what, who they are and what they do, we're kind of lost in many ways.

And so this, the idea here is they identify a certain receptor say and then they want to block it, they know the protein that blocks it and they model it and create it. And so by shutting something down or turning it on, they influence health. And there's a wonderful things that can be done of that. But protein folding is extremely complex. When I said there's 770 something amino acids, collagen has something like over a thousand. And they all have to fold together and be in exactly the right position for that protein to work. So it's a highly complex and it's only, they announced it, they did some work last year on deep mind, which

is a Google subsidiary that's only focused on protein folding. But it was just written up in science about a few weeks ago, about this huge breakthrough in the modeling of proteins and some of it out of the University of Washington, which is where I'm located. So that made me happy.

**Dr. Heather Sandison, N.D.**
So exciting. So these proteins that we think of them, I think some people think of them as strands, like a chain of pearls, rather a strand of pearls. But this is really, it's the tertiary structure is what we say in biochemistry. So it's how they fold back on themselves and create more of like a glob of pearls versus a long strand. And that glob is very specific, how that is folded. If it's a little bit misshapen to the left or to the right or up or down, then it will not work the same way. And so, this is extremely important. And there are a lot of people, I think maybe at DeepMind and I don't know as much about what exactly is going on there, but there are a lot of people looking into proteomics. One of the most really important pieces of data that we could collect is, how well are people's proteins folding and how often are they misshapen? How often are they well, how often are they shaping in the way that was intended? Because that has such a big, huge impact on cell function. And as you mentioned, not only the function, but whether or not the cell is capable of repairing. So, how does oxidative stress directly interfere with or support or change the way proteins are folded?

**Rowena Gates**
It will come in and because it's pretty radical that comes in and steals part of the protein. It steals an electron action so it's not a whole amino acid or something. But it influences the bonding in the protein and how it can, the folds are held together with different types of bonding that hold the structure to be stable. So you want the protein to fold correctly and remain stable. And so those free radicals interrupt that bonding, it can damage things directly as well. It just sort of takes a hit and there's a, a bit is either missing or not functioning and then the protein has to repair that and recover as fast as possible. And where we have the most protection probably is the DNA.

The body's really designed to try to protect the DNA because the DNA is the blueprint. And we hear about it, the blueprint of life and everything, but the DNA only has one purpose. It's the blueprint for proteins. And so that's why we are more about DNA than proteins, but actually proteins are sort of the whole point. But that's why the body is pretty good at protecting DNA, not perfect. And so once it's damaged, then its blueprint will not create the correct thing. And so that's how you get some of these spirals going in the wrong direction, is with DNA damage.

**Dr. Heather Sandison, N.D.**
So what states of health, what pathogens make people most vulnerable to Alzheimer's?

**Rowena Gates**
Well, that's your area. So, I would say, all the areas that you focus on, which are all the things that help avoid the oxidative stress, other things are things like endurance to athletes. If they don't regenerate correctly, they're taking a hit on the body. And so we have one triathlete that did the equivalent of 10 Ironman triathlons day after day, 10 days in a row. And it's called a DECA ultra triathlon.

**Dr. Heather Sandison, N.D.**
That's strange.

**Rowena Gates**
So, use the but we're good, but we're not that good. It's like, that's a lot of damage and the body's not designed for that. And so, you can do things that are beyond like just the toxicity and so on. And that's why athletes are often really paying attention to their nutrition. They're taking supplements, they're taking things like peptides, collagen, so on, which are the amino acids that are needed to build proteins. And by the way, there's 20 that are used and half of them come from food and half of them are made by the body. So if you don't get them from your food, then your body's gonna be struggling to create the proteins it needs.

**Dr. Heather Sandison, N.D.**
And it's probably gonna be stealing from muscle or another place the protein is stored just like it'll steal minerals from bones if you need it.

**Rowena Gates**
Exactly. It's the great adapter. It figures things out that are just spectacular.

**Dr. Heather Sandison, N.D.**
So from your perspective, why have so many of the treatments for Alzheimer's field?

**Rowena Gates**
I think for one thing, that they're addressing symptoms, they're looking at, how do we reduce the amyloid plaque? Well, that's a symptom of a problem. And so if you try to just interrupt it there, you've kind of missed. You've lost the plaque. It's much earlier and sooner. And so I think that's one of the reasons that science looked at it and said, oh, it's this, it's this plaque, it's this tango, we got that, there's two enzymes that create those snips of that APP protein I talked about. Can we interrupt those two snips? But it's like, why are those two snips jumping into action? And so, it's very late stage of view. It's maybe a great idea. Maybe you can do some good, but I think that in my opinion, there's a lot of focus on what's really very far into the symptom category rather than the cause.

**Dr. Heather Sandison, N.D.**
It's so important to think of dementia as kind of the way we think of cancer. By the time someone has dementia, dementia, they are unable to recognize their family or unable to come up with words. That's like stage four of metastatic cancer. And what we want to do is be intervening early on when you can't remember that word or the name of your neighbor who you haven't seen for a few weeks or the name of the street you lived on as a kid. When those things start going, when you notice that your cognitive function of your memory is not what it was a decade ago or a few years ago, that that's that kind of, we call it mild

cognitive impairment or a subjective cognitive impairment, that that's really the time to intervene and to start thinking about, okay, how might I shift my lifestyle? We know those things have a huge impact. So if we can reduce the oxidative stress just by changing what we do. And then there's other things that are exciting, some fun technologies. And we chatted a bit on this summit about photobiomodulation. And NanoVi, I was sharing with you before we hit record, like, I get so excited about this stuff because my model as a naturopathic doctor, functional medicine, however you want to call it, I love looking at the whole system as you mentioned and also what's gonna affect change and promote optimal function at the cellular level. And reading about your technology and some of the science that has come out about that, that's exactly what it does. So instead of a lot of the medications that we're seeing and certainly some of the new medications that that was recently and controversially approved by the FDA, then side effects are brain swelling and brain bleeding. But when we can intervene with something that actually enhances cellular function, the side effects become less inflammation, less pain, less osteoporosis, less migraine. It's like, whatever it is, better blood sugar. All the side effects of helping every cell to function a little better is that all of health improves. And so we don't have to combat this kind of like whack-a-mole game. So tell our listeners a little bit more about how NanoVi works.

**Rowena Gates**
Sure. I'm more than happy to. I've talked a lot about the proteins. And all proteins are immersed in water. In fact, we're usually 65 to 85% water depending how old we are and so on. But in the body, 99% of the molecules are water. So there's a lot of water in there, it's all over the place. And there isn't any protein in there that's not immersed in water. So that's the starting place. They live in water. And what we do is, we influence the water in a way that augments what the body naturally does with the water to support the protein folding and stability. And the way we do that, I can, well, I'm not screen-sharing. Oh, I am. Are they looking at me?

**Dr. Heather Sandison, N.D.**
I apologize. I have not made you the host, but you can now screen-share. Yeah, I would love to see these slides where you describing it, 'cause I think that the pictures speak a thousand words certainly in this case. And understanding how the water interacts with protein folding, it's really important here.

**Rowena Gates**
Yeah. So I'm gonna show the device, let's see, I'm going to move out of the way and move this up. But this way people actually know what we're talking about. And can you, you can't really see it. There we go. So...

**Dr. Heather Sandison, N.D.**
It kinda looks like something that an esthetician might have. There's like a water, humidifier essentially.

**Rowena Gates**
Every esthetician should have one And so this is a tube that you can breathe with like this or we can use a cannular. And I use the cannula because I use it while I'm working. I just turned it on. The bubbling water is just, the color in there is only for show and it's creating humidity, which is what we need for the device to work. So, I have... Just one second. I'm gonna move this down and out of the way. So, are you still there?

**Dr. Heather Sandison, N.D.**
Yeah, yeah, I can see you.

**Rowena Gates**
Oh I can't see you anymore. So, if you can see me, I can just keep going.

**Dr. Heather Sandison, N.D.**
Please do.

**Rowena Gates**
I'm so pleased No, I'm kidding. And so, with that humidity, we are emitting certain wavelengths. And you mentioned the light therapies, they tend to be around, just FYI, they tend to be around six to 900 nanometers. This is up above 1200 nanometers and higher. So it's a different part of the electromagnetic spectrum. And what we're looking for is the ability for the water to absorb the wavelength. Whereas red light therapy, if you put a glass of water in front of the red light, you will see the red light because it's not absorbed by the water, it goes right through the water. But we are the opposite. We want the water to absorb that energy. And then the person inhales the humidity and that's how it's delivered to the body. It has to touch the mucus membrane. But it's not delivered like a substance, it's actually delivered like those clacker balls where you hit one and the one at the other end goes up. So it moves across the water molecules in the body. And it's called ultra-fast transfer. But it's just a process in the system that is more akin to being electrocuted than to having something diffused throughout the body slowly.

**Dr. Heather Sandison, N.D.**
So this isn't like a supplement? Like you said, this is more, like there's an ultra-fast transfer. So would someone, just the logistics, the practical side of this, would someone wear the nasal cannular like you do at work? Is it 20 minutes? Is it for eight hours? How long do you do? Does it sounds like it's pretty passive so that someone even with late stage Alzheimer's would be able to put this on and get some benefits?

**Rowena Gates**
Yes, it is. And there was another thing you mentioned before about the early prevention that, there's also that whole side that doesn't matter how late stage you are. There's good things that can be done. And so I just wanted to mention that from our earlier conversation. But you have to do more. And so, we have different sizes of devices. So if it's the most powerful device, you use it less than the least powerful one. but it could be anywhere from 20 minutes to hours.

And if it's easy, like for me to use the cannula while I'm working, I'll just leave it running for a while until I have to get up or something. Because there's no reason not to use it. It's so easy to use. But if it's difficult to use, then you want to make sure you get in at least one session of 20 minutes a day on the most powerful device. And if you're in a disease state, you want to do it at least double or triple that or do two sessions with double length and so on. And so it's sort of, you just go full out when somebody is really struggling. And I should also mention, there's no reason not to do it. It doesn't have, because of the way we work, we're just changing energy state in the water in a way that supports the proteins. So, the proteins do everything. They know what to do. We're not overriding anything. So it doesn't have that potential for harm or anything that could happen. So there's no reason not to use it.

**Dr. Heather Sandison, N.D.**
Nice. Good, good. And then we had chatted just briefly about how to use it with photobiomodulation. So, that these kind of compliment and enhance the benefits of each.

**Rowena Gates**
Yes. So they're taking a different approach. Ours is systemic. We go from the inside out. And the red light therapies are gonna go to a certain length, certain depth. But if it's too deep, it's a laser and that could be maybe not good. So they're working from the outside in. So they're actually, they tend to stimulate the particles in the cell like the mitochondria, which is a really, as you know, a big use, it's a big factor in everything we do and we want the mitochondria working well for every different reason. And so, if kind of the red light hits it, it stimulates it, it has a positive impact. We're the opposite. We're going to the environment. And we're stimulating that, the energy level in there and so then, the object in it, like the mitochondria, the protein and so on, draw on that environment and function. And just so people understand, 'cause I'm sure there's questions about this energy state, but it's not an energy like heat or light that we normally think about. It's actually called entropy. And what our device does is, it makes the water more ordered or less chaotic, more structured, more water molecules are packed together and ordered.

That's the state that needs to build up on proteins for them to function because they can't just go from a chain of amino acids to a complex 3D structure. You need energy to do that. So where are they gonna get energy? From the water. And so we're just kind of improving environment for the proteins by making water more ordered so that the proteins can rely on that. And that's exactly what your body does. We're just mimicking it. The body's always recharging water to support the protein function. As we get older, we don't do it as well certainly in any disease state, not working as well or if we just want to stay healthy and have prevention, then you want to start augmenting that. And a perfectly healthy child with great nutrition and all of that stuff should not need this. They should already be full out. I don't know how many of those exist these days. But usually it's after 30 or 40 that there's more of a cellular decline.

**Dr. Heather Sandison, N.D.**
So, some of our listeners might be familiar with Gerald Pollack, who is also at the University of Washington. I was lucky enough to get to hear him talk at a conference about what he describes as the fourth phase of water and how important that is for some membranes that this, the water is basically lined up, these H2O two, these water molecules are lined up. And so, we think of water as being what we'd drink out of a glass or maybe it's in the form of ice or maybe it's in the form of steam, but we don't think of it as being in the form of water, but having the molecular structure lined up in such a way that it might have an impact on cell function. And this was the first time I was a sort of introduced to this concept, was hearing him speak. And you guys can take that concept and I think work somewhat with him to basically potentiate cell function by harnessing and exploiting this benefit of exactly how the water is lined up. Am I saying that right?

**Rowena Gates**
Yeah. It's really interesting 'cause when we first met him, we already had the technology kind of, sort of understood, but there was still this piece of water science that was not in place. We could prove it did work, but exactly why. And so when we met Gerald Pollack he was like, oh my God, you've built what I was thinking should happen.

And we were like, oh my gosh, you've got the water side. But your comment about the glass of water is really interesting because what Gerald's work needs is surfaces. This easy water, our fourth phase of water only builds on surfaces. You can't buy it in a glass. Don't let anybody sell you a glass of easy water because its got very little surface area there. And so, in the cell there are those tons of surface area. And so that's where that fourth phase of water is built up. And actually in the end of May, there's article published about NanoVi showing that it has all the characteristics of the fourth phase of water or easy water it's also called. The reason it's called easy or exclusions on water is that, since the water molecules are packed together, they push out anything else. And so they use little measures to see if it gets pushed out, then you know the water is very ordered and it excludes anything else. And so it's called exclusion zone. But it's just a zone on the surfaces. It's not a bucket of water. And so, that zone has to accumulate around the protein to keep it stable or to help it fold or to prevent it from misfolding. And so those are all, water, is the water and the protein interacting. That's the important bit.

**Dr. Heather Sandison, N.D.**
Yeah. So a lot of this can feel, I think it's hard to explain in words. But you guys have some great videos online. So I want everyone to know where they can take a look at the videos and kind of walk through the cellular mechanism of what's going on.

**Rowena Gates**
That's so helpful because it's so much easier to see it in a 3D video than it is to try to have me wave my arms. It's eng3corp.com. And then on that page, you just go to how it works. And so that's E, N, G, three, C, O, R, P.com. So, eng3corp.com or you can just do a search for NanoVi and Eng3. NanoVi is N, A, N, O, V, I. And nano because we're offering, we work at a very, very small level. And that's another way you'll find it.

**Dr. Heather Sandison, N.D.**
We talked about combining the photobiomodulation, but my understanding is that, this is something that be applied, really, you just enhance everything else that you do to promote

cell function. So if it's exercise or meditation or PEMF or red light therapy like we talked about or brain training and getting any of the cognition exercises, any sort of detox. It seems as if NanoVi kind of just potentiates, you get a little bit more out of everything when you have this easy water showing up in the cells. Is that right?

**Rowena Gates**
It's interesting. We have scientific articles on everything you've mentioned plus things like hyperbarics or which you also have a speaker in this, you've already talked to Marshall.

**Dr. Heather Sandison, N.D.**
Yeah, yeah. Mark Squibb, we spoke with, because I've seen clinically such great benefits with it. Actually the contrast, oxygen's, not just exercising with oxygen, but switching back and forth to exercising with oxygen and without.

**Rowena Gates**
So those are all things that we have that, sort of that scientific justification of why they amp it up so much. If you're doing or hyperbarics, you definitely want to also do NanoVi. Because for one thing, there's the oxidative side of that. The more oxygen, the more oxidation. And if NanoVi is the counterbalance to that, then you've got a really nice combination. But there's also things like mitochondrial function. It's one thing to get you it's another to get utilization. And so then, it's a really nice compliment when you do both. And we've got the same with PEMF and a photobiomodulation where it just makes a lot of sense that they combine and you're kind of coming at it from two different ways. The body really likes that.

**Dr. Heather Sandison, N.D.**
Can you talk a little bit more about the science and what's been published about what you're offering?

**Rowena Gates**
I can, I don't know if I can screen share, but I could show you what that look... Let me show you the results for, this is, so, that one publication is out. This is sort of the same team, but this part hasn't been published yet. So, it's a...

**Dr. Heather Sandison, N.D.**
We're the first to know.

**Rowena Gates**
Yes. I think that's gonna work. Did that work?

**Dr. Heather Sandison, N.D.**
Hm-hmm

**Rowena Gates**
You see a graph?

**Dr. Heather Sandison, N.D.**
I sure do. Yeah, you're on.

**Rowena Gates**
So, let me just walk through it really quickly. The very top line is a protein that's not damaged. And by the way, all enzymes are proteins, so are all hormones, so are antibodies. They're all proteins, they're just different sections or categories. And so these are our proteins that they damaged intentionally and then they measure the impact. So the top line is if it were undamaged, the orange line which is next down is when the proteins were treated with NanoVi before they were oxidized and the purple line is when they were treated with NanoVi after they were oxidized. You can't really see the controls, but they were also treated with a placebo device before, after and not treated. So those are three controls, but they all get clumped together at the bottom there.

And so, you can see this is a recovery of 42% if they're treated after damage and 45% if they are treated before damage. So that's substantially more protein working when they had NanoVi versus a placebo device. And so, that's one example. And this will come out, it's just not out yet. And this is another one. And I wanna point this one out as well because, in this case, green is after and purple is before. And you'll see the reverse. For this proteinS, the better results comes from treating after you damage it and then some treating before you damage it.

**Dr. Heather Sandison, N.D.**
So, are you saying that the protein actually recovered to an even higher state of health?

**Rowena Gates**
Only higher than the untreated proteins. Not as good as the whole, as if it had never been damaged. So it will not recover a hundred percent of the damage. But this testing was done by heat, by chemicals and these are both for oxidize. So they do oxidative damage because that's really the topic here and it's such a big factor for Alzheimer's disease. And so, those are the ones I just wanted to show. But to recover any of it is a good thing. But these results are recovering quite a pretty substantial amount of it. And so, that's some of the research, there's others. Others have been done on inflammatory markers that are also placebo controlled for the response of the immune system. And then another one is on blood lactate in athletes, showing that they have literally 17% less lactate when they will be treated with the NanoVi. Which really just indicates that the system's working better. It doesn't go into this lactate process as readily if it's tuned up in And so, this is the most exciting research because it's on proteins specifically, everything else is on say DNA damage or these other markers that indicate health at home or in a clinical setting. Heart rate variability is a very easy way to see the impact. And this comes back to one of the things I know you like and one of the things that's so important for what we do which is, rebalancing the system. I always want that system to come back into homeostasis and heart rate variability, you can see that NanoVi helps rebalance it for the autonomic nervous system.

**Dr. Heather Sandison, N.D.**
We actually, we call it, not homeostasis, but homeodynamic balance. So that it is, by appreciating that it is always changing, but that if we can nudge it back still into balance. And I think that what NanoVi also supports a lot of the other therapies that we were discussing is this ability to respond to the environment, an ability to recover, an ability to tolerate the distress, because let's face it, life is a little bit stressful, just being alive. And whether it's UV radiation, very natural, but it can still be a stressor on the system. There's lots of oxidative things that we eat that might still be considered healthy but it's about balancing that out, about coming back to that homeodynamic spot.

**Rowena Gates**
Exactly. I'm gonna totally change my language there because that's so much of a job description and of course that's a protein activity, the genes don't do anything there. Well, it's proteins telling the...

**Dr. Heather Sandison, N.D.**
The genes are what static. The genes are the static part and its that the proteins that really determine that dynamic ability.

**Rowena Gates**
Yeah. And the proteins are saying, hey, we need more of this whatever because the sky is exerting and so on. And it's also, one thing that's an interesting aspect of Alzheimer's is misfolded proteins and there's what's called the misfolded protein response. So you make too many proteins and they don't get folded in time, they're gonna go along together and cause problems. And so then, to prevent that because it's such a dangerous thing for the body, it has this response mechanism to jump in there and get these things, either chill them and get them out of the system or get them taken care of. And they literally just knock them out because having them stick together is not good in any part of the body. And you think about the Alzheimer's is the brain, is so closely related to diabetes because

that is just the belonging together, the proteins in the pancreas. And so, it's a very similar in that regard and you don't want them sticking together anywhere in the body basically.

**Dr. Heather Sandison, N.D.**
Right.

**Rowena Gates**
Yeah. And so the body's got all these amazing ways to, you overdo it over here and then it jumps in and does this. And where we get out of sync is when one of these processes just goes in line and it stays on and on when it should have shut down. And that one, the most common with that I think has chronic inflammation.

**Dr. Heather Sandison, N.D.**
So, are there any other exciting research studies or any other science that can point and help us understand a little bit more about what's going on with NanoVi?

**Rowena Gates**
There is a DNA, which is interesting. They looked at the double strand DNA breaks, which are the hard ones to fix because one side of the double helix can't just mirror the other side when those strands are broken. So it's hard to fix. And that one showed substantial improvement when the NanoVi was part of the protocol basically. And so that one ranged from about 15 to 35% depending on the subject. But everybody had much less double-strand DNA damage. And then I'll just add that, the double strand damage is why, it's a lot of the reason that people have trouble recovering from cancer therapies because there's a lot of damage, collateral damage essentially.

**Dr. Heather Sandison, N.D.**
Of course.

**Rowena Gates**
And so getting the double-strand damage takes a long time. So protecting it is also really important.

**Dr. Heather Sandison, N.D.**
So important. This is so fascinating. I want everyone to make sure they know where to find out more about NanoVi and this technology and all of the benefits that they can get from it and also about you. So, can you say again the website?

**Rowena Gates**
Yes. Eng3corp.com, E, N, G, three, C, O, R, P.com.

**Dr. Heather Sandison, N.D.**
And what else can we look for on the horizon? Are you guys planning other studies? Do you have new devices coming out? What's the future of Eng3?

**Rowena Gates**
We don't have new devices coming out anytime soon, but we do have ongoing studies and the human trials have been done to some extent. For example, looking at glutathione and saliva, because that's a good indicator of the body's ability to...

**Dr. Heather Sandison, N.D.**
Respond to oxidative stress, right? Yeah.

**Rowena Gates**
And so, those studies have been, I should say, the pilot studies have been done, great results. So that's sort of the next phase, is the human side of things. But the first phase is not yet published and it's just tremendously exciting. The results were shocking to the researchers that they could get get the DNA to a protein you don't expect them, especially proteins.

**Dr. Heather Sandison, N.D.**
Wow.

**Rowena Gates**
So, when you get them coming back to life, that's impressive. And so we're very excited about this, it's just everything takes longer than it seems like it should.

**Dr. Heather Sandison, N.D.**
Oh, the snail's pace of research, you're telling me. I know how that goes.

**Rowena Gates**
Researchers love the research part. They don't necessarily like the things they have to jump to to get things published. And so, anyway, yeah, that part's exciting. There's more on the horizon there. We've got more water science coming out as well, which is only exciting to a very small segment of the population.

**Dr. Heather Sandison, N.D.**
Those who follow Gerald Pollack.

**Rowena Gates**
Yes. And this one article, it's in the journal Water. It's a great article. He's just so involved in areas of water science that are quite esoteric to me at least. The water science isn't necessarily However, we did research there because we want to verify that we do what we say we're doing. It's always a good thing. And then verifying that it has the impact on humans, which we did a long time ago. And then also looking at the proteins themselves because in a human, you can't measure the proteins. As I mentioned there's thousands of them in a cell, so that's much smaller than what we can study directly. And so, you have to study the proteins as well. So that part of the explanation.

**Dr. Heather Sandison, N.D.**
Well, how exciting that all of this is happening and we're learning more about cell function, about protein function, about the role of water and how the water lines up and just these small things, literally mini itty bitty microscopic things, but how fundamentally important they are to our health and wellbeing and certainly to our cognitive function. So Rowena, thank you so much for, I've learned a ton going through the resources that you sent me and I, that's part of what makes me excited about being in this work is that, there is still so much to learn from each other and in the future from the science, from the technology. And I just really appreciate the work that you're doing to help others and to advance all of this.

**Rowena Gates**
Well, we are very good about getting information out to people because we want to share that information, but not unload it on people. And so, if people are interested, then just let us know and we'll be sure to get that out. And actually, the learning page for that, if I can just amend what I said earlier about, we'll have more specific information on the learning page for Alzheimer's disease. So, it's more targeted. It's eng3corp.com/AD.

**Dr. Heather Sandison, N.D.**
Great, excellent.

**Rowena Gates**
Adding AD will put you right into the more relevant information. And we put together information from different parts of our site, including the 3D video.

**Dr. Heather Sandison, N.D.**
Oh, how exciting. I encourage everyone to go there.

**Rowena Gates**
at the very beginning, excuse me, but everybody, eng3corp.com/AD.

**Dr. Heather Sandison, N.D.**
And we'll make sure that's in the show notes so people can just click there and head on over to eng3corp.com/AD. We'll make sure that's there so everyone can get easy access to this really helpful information and learn much more about what's possible.

**Rowena Gates**
Yes. And we only send out valuable information. We don't ask you every other week if you want to buy or something. worked out well. If you sign up, you're safe with us.

**Dr. Heather Sandison, N.D.**
It's really a pleasure to be working with you. You've shown me your integrity, your dedication to the science, that this isn't just about selling people something, it's really about educating and informing and letting people know that there are options and there are things that we can do and that there is access to devices that can really move the needle.

**Rowena Gates**
things that can be done and it doesn't matter what the stage is. There's really so much that can be done. And the main thing is to have the positive attitude and just set the intention of the upward spiral.

**Dr. Heather Sandison, N.D.**
Exactly. Rowena, thank you so much. What a positive note to end on. It's always a pleasure to be connected with you. And I can't wait to get this information out to all of our attendees.

**Rowena Gates**
Oh, thank you so much and thank you for hosting the whole summit. It's so valuable and we really appreciate it.

**Dr. Heather Sandison, N.D.**
Oh, thank you. That means a ton.

**Rowena Gates**
Thanks. Bye, bye