Reversing Alzheimer's With Precision Medicine: The Breakthrough Science Revealed Transcript

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Introduction to Brain Health and the Summit

We have the ability now to make our brain span our time, where our brain is functioning well, equal to our life span. Nobody should be sitting there and lecturing and say, okay, who wants to live to 140?

There are so many people now interested in, you know, super longevity. They'll say, okay, the hands go up and say, and then spend half of those years in a nursing home with dementia.

Of course, all the hands go down very quickly. We don't want to have a long life if we don't have a long brain health. Life. This is doctor talks. Hello and welcome to a very special interview for the Reversing Alzheimer's Summit.

I am your summit co-host, Doctor Kristine Burke. Over the last decade, I've helped many patients reverse their cognitive decline, and that is why I have co-founded True Neuron to help patients and practitioners be extraordinarily successful at this work.

In the summit, I'm bringing you interviews with thought leaders who can help you understand the pillars of brain health and the root causes of cognitive decline.

I want you to learn what you need to know to prevent and reverse cognitive decline and Alzheimer's disease for yourself and your loved ones. I am beyond honored today to introduce you to one of my most cherished mentors.

He is a brilliant and kind person and one of the fathers of this work. Doctor Dale Bredesen. Doctor Bredesen received his undergraduate degree from Caltech and his medical degree from Duke.

He was a postdoctoral fellow in the laboratory of Nobel Laureate Professor Stanley Prisoner, then held faculty positions at UCSF, UCLA, and UC San Diego.

He was the founding president and CEO of the Buck Institute for Research on Aging, and his laboratory studied mechanisms of neurodegeneration and published over 200 scientific papers leading to the first report on the reversal of cognitive decline in Alzheimer's disease.

He is the author of two New York Times Best Sellers, and is currently senior director of the first Precision Medicine for Neurodegenerative Diseases. This is at the Pacific Neuroscience Institute.

Dr. Bredesen on Reversing Cognitive Decline

Doctor Bredesen, thank you so much for taking time out of your very busy schedule to share with us about all of the great progress and innovation that's happening right now.

I don't even know where we should begin. There's so much positive to talk about, but maybe we start with what's real right now, and then talk about what's on the horizon.

Yeah. Thanks so much, Christine. Always great to talk to you and really appreciate all the fantastic work that you are doing. You know, we think about it, it's a relatively short time.

Alzheimer was about 118 years ago that he described this disease. And there really hasn't been progress in terms of turning things around until very recently.

So it was just a few years ago that people this the standard, as you know, was to say we don't know what causes it. There's nothing to do about it. And the classic was there's nothing that will prevent, reverse or delay that has completely blown up.

And now we're seeing more progress than ever. We're seeing hundreds and hundreds and hundreds of people, as you well know, reverse their decline. Obviously, we're both in the middle of a randomized controlled trial that is showing this again and again.

And the bottom line now is, with all of the progress, with all the new things going on, Alzheimer's disease is now optional for anyone who is willing to start early, not wait till very, very late.

And they can do very, very well and getting on. We recommend anyone who's 35 or over get evaluated get on an active prevention. There are now, as you know, wonderful new blood tests that make it very simple to determine whether you are headed just like looking at hemoglobin A1, C early before you ever have diabetes, so that you can prevent yourself from all the the problems associated with type two diabetes.

It's the same story now with Alzheimer's. You can see it coming. You can prevent the problem. You can avoid dementia. And that is a huge difference for every for.

It really is a huge difference. And I know, you know, at my practice that I'm so grateful that when I'm doing these early biomarkers and I'm seeing the abnormalities that suggest the pathology of Alzheimer's disease is developing, that I can deliver that news with the hope around all of the things that we can do to help reverse it and to and to basically have the opportunity to prevent it from developing into the symptomatic disease.

And I just think about all of those people who don't have that opportunity that if they are getting early biomarker testing, they're not being given the news about the hope that there is and all of all of our capabilities, why not?

So let's touch on, since, you know, we're we're doing this work together in the randomized controlled trial, the Evans the dementia Reversal trial. And why don't we touch on at first or first here what we know works.

Yeah that's a great point. So it is critical for for all of us. You know, as we're making this progress, we need to document, we need to prove, because there are a lot of skeptics who will say, you know, I've always been taught that there's nothing that can be done about Alzheimer's.

How dare you say that something is going better. While we've published multiple papers on this, we've got documentation. But of course, there are varying levels.

We started with. We started actually because we were turned down to do a trial back in 2011. We started with anecdotal evidence, more anecdotal evidence.

We then had a paper with 100 anecdotes. Then the next stage was a proof of Concept trial, which was published in 2022, where 84% of the people improved and then, the independent confirmation and of course, doctor Heather Sanderson published a separate trial doing the same sort of thing, getting the same sort of results.

Now, the next step to that is a randomized controlled trial, which is what you are involved with, obviously, and with six different sites around the country.

I'm really honored to work with you and with Doctor Hathaway and Doctor Taddeo and and everyone Doctor Toups, Doctor Bergman, Doctor Hasi, everyone, so that we can actually see, okay, in a randomized controlled trial, do you see a difference between current standard of care and the protocol that we're all using a precision medicine sort of approach.

And certainly the interim analysis suggests there's a clear difference between outcomes in people who are who are undergoing standard of care and people who are doing an optimal protocol.

Now, there are all sorts of issues, of course, with is it optimal? Did people address the right things? Were they compliant? But as you mentioned, you know, what are the things that are actually working.

So I think it's important to just lay out what are the things that caused the problem, because those are the things you have to address. And they're really what the laboratory showed us.

There are six major issues. There's energetics. There is inflammation, there's toxicity, surprisingly common. There's then trophic activity, things like your hormonal status, your nutrient status, your neurotrophic status, Bdnf, NGF, things like that.

There's neurotransmitters. You've got to have enough acetylcholine to make those memories. And then finally stress. And you know, as a scientist, I didn't used to think that stress was a big deal.

It turns out to be very important. In fact, you can actually see that as your cortisol goes up, your brain begins to shrink down. So these are all critical pieces.

And the we always think in terms of the seven basics and then the two specifics.

Core Causes and the Seven Basics

And as you well know, the seven basics are a plant rich, mildly ketogenic diet, which again and again has proven to be able to make people insulin sensitive, to make them use energy appropriately, because you've got to use either glucose or ketones.

And most of the people we see with cognitive change are using neither. They can't make the ketones because they're insulin resistance, and they can't use the glucose appropriately because they have high insulin.

They have insulin resistance. You can literally measure the changes in their insulin receptor signaling through IRS one. So you can see what's actually going wrong there.

And that's been published eight years ago. So those are those are critical piece. Then exercise sleep stress brain training detox and some targeted supplements.

Those are the basics. And then the specifics. You have to look at the various pathogens, the things that are driving the inflammation. And you have to look at the various toxins.

And I have to say so commonly people will tell me, well, this doesn't seem to be working out so well. And it turns out the person has an undiagnosed chronic infection or an undiagnosed exposure to various toxins.

And of course, we see things like sleep apnea that will impact your ability to have appropriate and optimal energetics. It takes a lot to power 500 trillion synapses, which is what you have.

And so I see the things like getting people to be insulin sensitive, getting their ketone levels appropriate to give them that energy, making sure they have oxygenation.

So I just checked mine this morning, checked my watch. Deep sleep. Did I get last night? You want to have at least an hour and a half? How much? Or sorry, at least an hour of deep sleep.

How much REM sleep did I have? I want to get at least an hour and a half. How much total sleep? I want to get at least seven hours. And then how did my oxygenation do?

And I want to make sure it stays above, 94% in terms of saturation. And I really do worry when people are down in the 80s and we've seen people into the 70s, which really shocks me.

And so and then of course, all the CGM that everybody's using now with the, with, glucose monitoring, continuous

glucose monitoring, so helpful so that you can see people who will wake up at 4 a.m..

They never knew why until they found out their glucose was 43 at 4 a.m.. And then people who are bouncing up to, you know, 200, 220 who really are heading for a wedding for diabetes.

So these are so revealing as we can now look at these things. And as you well know, it's been so sad that the doctors have not been looking at the very things that are driving the cognitive decline.

So no surprise, they think, well, we don't know what causes it because they don't look. And now we have the ability to look at these things to pick up the biomarkers, as you mentioned earlier, so that you can see it coming, you know, what to do about it.

And you can have great outcomes. And by the way, we just have a paper. It's freely available online showing the first sustained improvement for over a decade.

So and we learned from that that some people will have a secondary decline after several years. When you reevaluate them, they've got something new, you have to address that, and they come right back up and do very, very well.

So the armamentarium is growing rapidly and very effectively. Absolutely loved that recent paper with the sustained improvements, because it really emphasized that this is an ongoing process of lifelong care of our brains.

It's not about that. We have what we have until we don't have it anymore, which is how a lot of people view their brain health. It is quite literally something that we have accurate and full control over.

Our cognitive health is absolutely it's very important, in fact. So I have a book coming out, in March, which is called The Ageless Brain. And it's exactly what you were saying.

It's basically saying, look, we have the ability now to make our brain span our time, where our brain is functioning well, equal to our life span. Nobody should be sitting there.

And I often ask that people, you know, if I'm lecturing, I say, okay, who wants to live to 140? And there are so many people now interested in, you know, super longevity.

They'll say, okay, the hands go up and say, and then spend half of those years in a nursing home with dementia. Of course, all the hands go down very quickly, so we don't want to have a long life if we don't have a long brain health life.

Exactly, exactly and true in every arena of our health, right? We want healthy longevity, not just longevity. So you mentioned all of the pillars, the supporting factors that help us.

I know one of the things that we used to help people get into ketosis is the Keto Flex 12 three food plan. And, there's some support around that that's been out there lately.

That makes it a little bit easier for people to get into then to ketosis. I know using tools like Keto Mojo, for example, to help us with tracking ketones so that we can assure that our patients are achieving ketosis, and then using some of the ketone salts so that when people are trying to get there, but they haven't quite gotten their metabolic flexibility to the point where they can generate enough ketones to fuel the brain on their own.

And then you've been working and and I have as well, in my practice with nutrition for longevity as a support. Yeah. And they've done a great job. And you know, so the idea here is as we understand all these physiological pieces, it's how do you then do it.

And it can be overwhelming. So my argument is always look, if you do one thing that you weren't doing yesterday, you're doing better. So just keep on at your pace in improving things.

So a lot of people said to us, gee, I just going out and getting all these things and finding these things for, you know, cooking for dinner is not that easy.

Isn't there a simple way to do a keto flex type of diet? So we worked with nutrition for longevity. They've been great and they've obviously done other meals as well.

So they now have a Keto Flex 12 three that can be delivered. And so it makes it very easy. And you can do, you know, a week at a time, or you can do however many you want to do.

And that's made it a lot of a lot easier for a lot of people. Yeah. And I think it's also really helpful from the creativity side, because when people are making a huge food shift like that, they really struggle with how to be creative because it's just right.

It's not part of their normal toolkit. And so having something like that that provides you with the with the meals that you just assemble, basically, you know, put them together, then you can start to see how to combine things and how to make it interesting.

I think that's been really lovely, and I've had myself a number of times and they're excellent. And so it makes it makes it easy and and effective. And of course, at the end of the day, we're all interested the exact same thing.

How do we get best outcomes in a situation where it just until very recently there has been no hope. There's just been nothing. And so people and unfortunately so many people are still of the mindset, well, I'm just going to wait and wait and wait because I know there's nothing to be done about it.

And and I hear this all the time. And so we encourage everybody, please everybody. If you are 35 years or older, please get the blood test that there's one specific one.

We've interacted with an excellent group called neuro Code. That's very they have the most sensitive tests in the country and that's called brain scan.

But you can also do other you got to get your PTO, your gsap and your NFL because they tell you three very different thing. Your PTO will tell you whether you have that signaling that is on the protective, not the not the connective side.

It's telling you you're headed for all the time. It's a little bit like looking at your fasting insulin. It's telling you you're headed for problems. So just got mine checked a couple of weeks ago.

So I'm very, very happy to see that it was normal. And I'll check it again in two years. If you're younger than 60, just check it every five years. That's fine.

And then of course, you also want to know what are the drivers that could be giving me problems. Is my homocysteine too high? Is my CRP too high? Do I have ongoing inflammation?

There are about 80 million Americans who have metabolic syndrome. That is a very important risk factor for Alzheimer's disease and really increases your risk of dramatically.

What is your ApoE4 status? Do you have zero copies, one copy or two copies? Zero copies? You have about a 9% chance of developing Alzheimer's. Do your lifetime one copy.

You're looking at about 30% and two copies. A recent paper came out that showed it's about 90%. So big difference. But you want to make sure again to address this, the good news again, nobody needs to get this problem.

So please get started early. You'll save years. You'll save synapses. You'll save a lot of, you know, a lot of sadness there. Just so many people impacted.

About 45 million of the currently living Americans will die of Alzheimer's. If we don't do something about it, we could make that number much, much lower if everybody would get evaluated and get on early treatment or active prevention.

Yeah. And I think you make such a good point.

Early Detection, Biomarkers, and Risk Factors

People are often so afraid to look for those risk factors because they still find the the miracle of this work to be too, too good to be true. But you I see week after week as we work in the research, study, and week after week as we each work clinically in our practices, we do see miracles happen.

We see ten point Moca score improvements, and we see people get back their cognitive capacity. It's it's amazing. And it's available. And I really hope that your message hits home that people need to be need to be looking in them.

They need looking at their risk factors, and then they need to be seeking out how they need to make changes to protect their brain. You know another thing, those lines with early detection, that's one of the areas of new research that I'm really excited about.

And I know we've talked about some of the visual pathway detection and speech detection. Why don't you talk a little bit about what's on the horizon with these new technologies?

Yeah, it's a great point. And I would just add, you know, one of the other things we see is that people, when the whole families come in and say, okay, we're just going to do this because we know we're all at risk.

And they'll say, wow, I wasn't symptomatic, but things are better. So they actually were having minor symptoms, but they weren't aware of it. It's so common for all of us.

And they say, wow, I have more energy. I commonly hear, my gosh, I don't have any arthritis anymore, you know, commonly, oh my gosh, my lipid numbers are so much better.

I'm thinking better. I'm remembering better. One woman said to me, my my memory is better than it's been in 30 years. So we hear this sort of thing, as you know, all the time.

And so as you indicated, you know, we're we're seeing this burst in activity and looking at new things. And it's interesting, if you look at things that the brain does that are integrated over multiple pathways that are relatively complex, these things will break down relatively early.

And so one of them is speech. And there are multiple groups. And one of them, for example, Canary has done a nice job with looking at what changes in speech are associated with changes in brain function.

Are you on your way to Alzheimer's? Things like that. You mentioned also extra ocular movements. That's another one. So all the things that happen with your eye movements.

Now, in the past, we always thought about eye movements with a different demented disease called PSP progressive super nuclear palsy. And right now we know we're headed for can we do things for all the neurodegenerative diseases.

And we're seeing some very good results with macular degeneration, with Lewy body disease, with Parkinson's disease. So I think we're we're on the way to being able to understand the different pathways for all of these.

But right now, with the ocular movements it's gone from, can you look up and look down, which is the big issue with PSP two now, all sorts of more complex eye movements that are being used again for early diagnosis.

Another thing that people have been interested in is keystrokes. Just the way you interact with your computer will change over time, and so you can pick up changes early on in the number of groups.

Actually, like even like Microsoft, some of these groups have been interested in picking up keystroke changes over time. So I think that with the blood testing and with the various functional testing, this moves, they know the biggest problem we've had is people wait and wait and wait.

Do they come in when the disease is very late, coming in early, as you and I have both seen and many others have seen, it's relatively easy to pick up.

Oh, okay. Here's the thing that's driving this. And we can make you better. And it's or you bring in someone who has, psi subjective cognitive impairment, which is the second stage.

You go asymptomatic Cinci dementia. You get people at the CI stage, virtually 100% of them can get better if they do the right things. You identify the things that are driving it.

So I think that these things are all on the horizon for the diagnostics, the diagnostic side, which will make a huge difference. Yeah. I think one of the things that we see often, and I'm sure you do as well, is something that we call dementia denial, where people have a tendency because this is a scary thing.

Up until now. Right. It's been a very scary thing to think that your brain function may be declining. And so people deny or dismiss the early symptoms that they have, and they try to chalk it up to aging.

Or, you know, all my friends are like that. Okay, well then all your friends are now experiencing symptoms of some cognitive impairment because these are not normal changes.

They're common, but they're not normal. And that's something that we find ourselves up against very often where people don't recognize that that prevention stage, because we have prevention, we have disease modification.

Once we're kind of in that, you know, the MCI, the MCI, and then maybe early dementia, and then we have the more severe disease. And really at that point we're salvaging what we can of the brain function.

And we both know that that's the hardest that's the hardest thing to do. We can be so much more effective than those earlier two stages. So I am really excited about about these these earlier detection techniques.

I know one that you had mentioned to me was the arterial spin labeling. Can you talk a little bit about that? What is that? What does that do? What does that provide us?

Yeah. Great point. I just want to add to what you just said about late stage. So you can we do see people who go from Moca scores of zero to, you know, 8 or 9.

They do much better. They can speak better, they can remember things, that sort of thing. But it's much harder to bring back all the lost synapses. You have to remember that after you optimize things and you get signaling going in the right direction, you now have to rebuild the synapses that have been lost.

And if you've lost so many and you've really lost neurons as well, it is get becomes progressively harder to do this. Now with respect to arterial spin labeling.

And I have to credit Doctor Siris Raji, an excellent neuro radiology professor at Washington University, who is really pushed this and pointed out what this is really doing is it's an MRI technique, doesn't add a lot of time.

You may be on the scanner five more minutes or something like that. So a little change in the MRI but not much. And what you could do now is you can look at blood flow throughout the brain.

So it's essentially like doing a Pet scan. But you get the beautiful definition of the MRI. So this this beautiful

combination. And so what you can see is you could see reductions in the temporal parietal region.

But especially you can see reductions very specific for Alzheimer's that are in the posterior cingulate and the Preakness. And those are the two classic regions for Alzheimer's disease.

So it gives you the MRI definition with the Pet scan definitive diagnosis of Alzheimer's. And I would add so many times I will hear, well, I was having problems with my cognition.

I went to my doctor and he said, oh good, we checked you, it's not Alzheimer's and then sent me home. Well, wait a minute. That doesn't mean you're not having problems.

So this could still be vascular. This could still be various things that cause brain fog. This could still be frontotemporal dementia. This could still be Lewy body disease, and this could still be early PSP, so on and on. So the bottom line here is it's not just about if it's not Alzheimer's go home.

It's understanding what is driving the process, whatever the diagnosis is and addressing those things. And the arterial spin labeling will help to tell you, is this going down an Alzheimer path or is this going down a different path?

You may see parietal and occipital reductions, which will be going down more. The Lewy body type of path. So so there are lots of things that could be done.

Now again to look at what's driving this and to make a big impact.

Emerging Diagnostics and New Treatments

Again, we come back to the fact that the cognitive decline should be a rare problem, should be prevented, should be taken care of early if there are symptoms and it should be determined why.

And these things, there's nothing on there that can't be addressed. Well, and I think to your point as well, when you go to the conventional doctor and they tell you good news, it's not Alzheimer's, what is that based on?

Is that just based on a cognitive test that shows that you're still performing at an acceptable level, but maybe well below where you had been capable of performing before?

Reinicke it's what what is being used to make that determination, because sometimes I see that people have been told that and it's not actually true. When you dig into these early biomarkers and some of these other testing methodologies that we have now, you see that those changes really are starting to happen.

And sadly, for a lot of people, it was either number one, they did a spinal tap. And you know, who wants a spinal tap for this? You know, for Alzheimer's diagnosis, you no longer need a spinal tap.

So those shouldn't be necessary anymore. Or they've paid a lot of money for a Pet scan. And again, you can get so much information without that. Now it's you don't need those thousands and thousands of dollars for a pet scan, or they even haven't done those.

And they'll just do a standard MRI with no volume metrics and say, yeah, it doesn't look that bad. And you're right, this is so sad because they're missing an opportunity to change someone's life.

So as I always tell people that that we that we train in this sort of approach always say, look, when someone comes to see you with cognitive decline, there are only two outcomes.

Either you're going to figure it out and help them or they're going to die. So let's do everything possible to make sure these people don't end up in a nursing home, and for ourselves to make sure that we have our optimal cognition for our whole lives.

Yeah, it's so, so important. I'm really excited to talk about our next section, which is the new treatments that are on the horizon of course, as we have just talked about, we can see really phenomenal improvements with the things that we've been doing, the things that we know how to identify and how to address.

But nevertheless, new things are on the horizon that are pretty exciting to both of us. And so I'd love to spend a little time talking about those. Yeah.

I mean, I think this is a really a burst of innovation and enthusiasm and excitement. This is a renaissance where ten years ago, nobody was getting people to reverse their cognitive decline.

Now it's just going crazy. And we're seeing more and more. And that the armamentarium, as I mentioned earlier, is growing and the tools and I know you've got a number of things on your list.

I would mention even before we start there, we've all heard from Doctor Richard Horowitz, who's getting some very good results with DAP zone, which has typically not been used in dementia.

But what he's showing is there's so many people, there are issues of chronic infections that you're often not aware of. It may be Borrelia, it may be Bartonella, it may be the BGA, it may be others.

And so, DAP zone has actually turned out to be quite effective. But I know that you've seen and been interested in some of the results with some of the others, like TB 006, a very promising approach.

Maybe. Maybe you would like to talk about that for a minute. Yeah. So, you know, we those of us who are familiar with Alzheimer's pathology, I imagine that most of our listeners are.

But just to be sure, there's two things that end up happening that conventional medicine has focused on, and that's the amyloid beta plaques and then the tangles of tau that those get stimulated by a wide variety of different things that create inflammation and oxidative stress in the brain.

And that's all these root causes that we've been talking about. So part of the assembly mechanism to make those amyloid beta plaques involves a protein called galectin three.

And galectin three assembles those amyloid beta fragments into those clumps. And so this new binding antibody that's past its phase two clinical trials at the time that that we're discussing it, it binds to the free galectin and basically keeps it from that assembly mechanism to make more amyloid plaque.

And it also in the process calms inflammation in the brain. So it blocks part of the the pathological piece. And then it also calms the driver of that piece.

And so there have been some really, really successful outcomes with that. I know what you and I have talked about is that it's frustrating that it needs to be done continually in the conventional world because the root cause drivers aren't being addressed.

And what we are hoping to see down the road is that when we combine that with our precision medicine approaches, that they will work together synergistically and it won't necessarily have to be something that's long term.

Or maybe it could be spaced out a little bit more because it's an IV infusion every month right now. Yeah, I agree, I think that for many of these things, once we get rid of the root causes, these things will help us get over the hump.

When you when the person first comes in, there's everything so many things that are on the wrong side. And one of the exciting developments to me, just in the last year and a half, is the understanding that you have an entire kind of systemic response, which will literally flip you from connection to protection.

And you can see it at every stage. You can see it at blood clotting likelihood. You can see it at cytokine production.

You can see it at SAP Alpha, the how the app is signaling in your brain versus the a-beta.

You could see it in all these different pathways so that you really are changing the. So once you have flipped yourself back from the more a protective side, which is where you're making the a-beta.

And isn't that interesting? We've always been told that a-beta is destructive. It's really a protective anti-microbial peptide, that is. But it's pulling back on your synapses.

So you want to get back into the connection mode. But to do that, you want to get rid of the pathogens and get rid of the toxins and get rid of the metabolic changes that you're seeing.

And so this is this is giving us a roadmap on what to do. And as you mentioned TB 006. And I would add a I would say a simple way, probably not as effective, but a way at least to get at that same pathway has been packed us all where you can actually impact that same pathway, perhaps not as dramatically as you can, but something that may be helpful for people interested in maintenance after that.

But as you indicated, as you now are doing the right things, you now can move these off. And I would say the same story with the GLP one. So if you're starting with Ozempic, okay, you're going to do better with your metabolic status.

And but you want to be able to get off that after a few months. And so I would say there may be a place in the future for starting with a few months of ozempic or something like that to get people to improve their insulin.

But ultimately we want them to be insulin sensitive. So again, we have the ability to optimize the human physiology and biochemistry so that people can get metabolically healthy and can detox appropriately and all these things.

But getting them started, as you mentioned, not easy. You've got to you got to figure out what it is that what you're having to address and then addressing those.

The problem that we're running into at the moment is there's so much that can be done that it is overwhelming and some people will say, well, I don't want to spend the money to do this, that or the other.

I think it's important always to remember if you don't do anything. The average American spends $350,000 before dying of all this. I mean, that was pre-pandemic.

So it's gone up since then because nursing homes are expensive. That's the bottom line. So my hope is that very few people will ever have to go to a skilled facility.

Now, some people may go beginning to assisted living, and I'm very enthusiastic about what doctor Heather Sanderson has done and others now starting to do this when she created Marama, which I think was a wonderful idea where people early on go into an assisted living, do the right things and come back out of the assisted living.

Being independent once again. So I think, again, things are changing. There's a huge paradigm shift in the way we think about cognitive change and the way that we're able to prevent it.

And reverse it and the and the the malleability of it. Yes. So one of the things that we end up working on a lot is the mitochondrial function and the efficiency of the mitochondria, the density of the mitochondria, because those are the little power plants in the cell that are generating that energy, that electricity, if you will, to keep the lights on for the cell.

And you had mentioned to me something about mitochondrial transfusion, and I am really interested to hear more about that. Yeah. And of course, there are a number of things that people use for mitochondria.

There's been your biochemical support for years with things like Cocu and things like that. Then there's also red light therapy, which has turned out to make mitochondria function a little better.

And as you mentioned, this is one of the biggest rate limiting steps in our function. And for those people where the main problem is mitochondrial complex one, they end up with Parkinson's, that's very clear that that is the rate limiting feature in the entire body that functions that as that function declines, you develop Parkinson's.

But as you mentioned in aging in general and in Alzheimer's and in others, mitochondrial function is suboptimal. And it can be related to accumulated mitochondrial mutations, it can be related to oxidative damage, etc..

And so there are a number of ways to get at this. And again, I would give credit to to Heather who mentioned what about matrix. So matrix is a new company I just saw just following up on her suggestion.

I just talked to the CEO a couple days ago, and they're they are just getting to clinic and what they are doing is they are they are isolating mitochondria.

And they're doing this both from platelets. Interestingly. And also they're doing it from stem cells. So they're getting healthy mitochondria and they're essentially encapsulating these and then injecting essentially as a mitochondrial transfusion.

Now the interesting thing I would have thought, well, okay, so what you got to get the mitochondria inside the cell. But the exciting finding is that in fact mitochondria move from cell to cell.

And one of the points that they made is when you have an infection, you've now got to ramp up the activity of your leukocytes. Your platelets now coming out of the bone marrow, carry extra mitochondria in them.

They go from an average of about five to an average of about nine. And they transfer those into the leukocytes so that they'll be able to have a burst and fight the infection better.

Fascinating stuff. Point is, we know that there is cell to cell transfer of mitochondria. So let's give you some better mitochondria. Let's boost this.

I do think the other piece of this is going to be they're now able to look at your cells. You. So you can give a sample blood sample for example. And look at what percentage of your mitochondria are functioning.

What percent are nonfunctional. Because as we age and as you get things like Parkinson's or Alzheimer's, we have a greater percentage that are nonfunctional.

So we want to then boost that up and get back to having more functional mitochondria.

Mitochondrial Support and Future Therapies

So I do think although these are early days, I'm excited about this potential addition to the armamentarium. And they are just ramping up and just beginning to do the first of these.

They've been they started with looking at ocular disease. The animal studies are quite promising. So I look for this in the essentially the near current future very very soon, if not now, to be able to, to help people with their mitochondrial function and again grow the armamentarium so that we can help more people and get more complete outcomes.

Yeah. And I think just like many of the other things that we've talked about, it's another opportunity to equip the body in a way that's been compromised so that it can do the work that's necessary to help and rid infections and detoxify the toxic burden.

All of those things that need to happen in the body are very highly energy dependent. And so at the same time that you have all these highly energy dependent things that need to happen, you have a low capacity for generating that energy, and that's part of the challenge.

It's a vicious circle between those things. And so this, you know, we use exercise as one of the ways to try to improve mitochondrial efficiency, improve the density of mitochondria in the cells and how well they work.

And so this is just another way of helping to equip the body to heal. And so I loved that. But I would imagine and I'm just speculating. But I would imagine that in the same way with TB 006, if we don't address the root cause drivers, we continue to have the damage to the mitochondria.

And you know, we can keep giving them that, but they're not going to stay healthy if we don't fix those root causes. So it just all has to happen together.

Yeah. That's such a good point. And so, you know, we always think in terms of the three pieces that have to happen, you have to get rid of the thing that's causing it, the things that it's usually multiple things.

If you're living in mycotoxins, you got to get rid of that. If you're metabolically killing yourself with ultra processed foods, you got to quit doing that.

If you've got a leaky gut, you got to heal that, all that stuff. Then the second thing is you said, we've got to optimize what's there. Your mitochondria have to function well, you know, your cells have to do the right thing.

They have to communicate. You're literally have to switch from making the A beta side to the S8+, which is supporting connectivity. And then the third piece, which is the reason you don't want to wait till late, is you got to rebuild what's been lost.

So the earlier you get in there, the more of the dysfunction that is really just a chemical dysfunction, not an anatomic dysfunction. As you get more and more anatomic dysfunction, it is tougher and tougher.

Although to be fair, we see some dramatic improvements in MRI's. But you said something important which is vicious circle. Vicious circle is the definition of a prion.

So we know that all of these different proteins that people keep saying, oh, it's a misfolded protein, know these things are doing their physiological roles, they are becoming anti-microbial.

You're now making p tau. You're making amyloid beta. You're making alpha synuclein. These things are responding to these insults. But these things what happens is they are enhancing themselves.

That's what prions do, because they are switching you from that state of connectivity to protection. They are now killing the microbes. So our theory currently is that these are actually pre inflammatory mediators.

In other words your brain can get along with some amyloid sequestering and killing the microbes for years. And in fact many people will die with completely normal cognition and have a brain with a lot of amyloid in it.

It's when that becomes the oligomers, the pro-inflammatory pieces, that you really start losing the synapses. So as long as you're doing well, these things are basically almost like putting a finger in the dike.

They're, they're yeah, they're holding on and say, okay, you're not that bad yet. So we're going to help you. So again, we check it early. We see, oh my gosh, you're heading for a situation where you could have a problem.

Great. We can intervene now before you have any cognitive decline and have a great life with great cognitive function and all that.

Finding Dr. Bredesen and Closing Remarks

Yeah. I mean, it's it's really the definition of too much of a good thing, right? Yeah, exactly. It is. Oh my gosh, I know that we could talk for at least another hour if not 2 or 3, but I do need to be respectful of your time and let you go at some point.

I know that this has been a very, very informative discussion. I'm super grateful for your transformative contribution to the summit today. I know that after listening to this, people will want more of you as I always do.

So how is it that people can find out, find you and find out more about your work? Sure it's easy. Thanks for asking. So, and there's some books out. The end of Alzheimer's.

The End of Alzheimer's program, the first Survivors of Alzheimer's. There's a new one coming out in March, which is called The Ageless Brain. And then there's you can see me on your Facebook, Instagram X, and we just got on blue Sky recently.

So we are there as well. And then there are all sorts of courses and things. So you can go to Doctor Bredesen, dot com and all sorts of things that can be done.

So again, I really appreciate what you're doing and everybody out there, we all need to work together to reduce the global burden of dementia. There's just no reason that this should be such a common problem.

So true. Well, thank you again so much for joining us today. And I want to thank our listeners for joining us. And if you've enjoyed today's interview on the summit, I encourage you to join us and listen to more because there's a lot to learn here.

Thank you for joining us today. Thanks, Kristine. Take care. Bye bye. Thank you for tuning in to Doctor Talks. We hope today's episode has enlightened and inspired you on your path to optimal health.

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