Sponsor Messages

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Discover more at www.professionalco.gov. A quick shout out to my other sponsor, Functional Medicine University, one of the top online programs for learning functional medicine.

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If you're ready to level up your practice with evidence-based root cause care, FMU is the place to start. Check them out at functionalmedicineuniversity.com.

Everybody, Dr. Rob Silverman here, Proven Health Alternatives. I have a luminary in the field of functional medicine and neurology, Doctor Dale Bredesen.

He's here to highlight his brand new book. the ageless brain. Dr. Bredesen, thank you for coming on. Great to be here with you, Dr Rob. Thank you so much for having me.

It's my pleasure. Everybody's been asking for you and thank for squeezing some time in your very busy schedule to appear. We were just talking off camera.

Let's just dig in. You were telling me how an exciting time it is for your life in reference to Alzheimer's and all that you've learned about neurodegenerative disease.

Yeah, and so, you know, I've been studying neuroscience for 50 years, And it's been a problem where, if you have Alzheimer's, You're going to die. If you had ALS, your going die, If your have Lewy body, Frontotemporal Dementia, PSP, CB, just go right down the list.

They are all death sentences. That is changing. We've got earlier detection. There are new blood tests. P Tau 217 and a beta 42 40 ratio. This one called brain scan that is very sensitive blood test.

I just had this done recently myself because everybody should know their cholesterol and their blood pressure and should their brain scan should know whether they've got any early inklings of heading toward these diseases.

When you catch them early, just like getting a hemoglobin A1c, you can see things coming for the first time and now we know there's a lot you could do about it.

We've got a published clinical trial. We're in the midst of another clinical, randomized controlled trial at six different sites around the country. we've done the interim analysis the halfway.

It's going to be finished in October. The results are fantastic. Were seeing that people in control group, no surprise with Alzheimer's, going downhill.

People in treatment group are going up. We've recently published the first examples of people sustaining their improvement for over a decade. So this is a new era.

Better blood tests, better imaging, sustained improvements. You mentioned functional medicine.

Introduction to Dr. Bredesen and The Ageless Brain

Understanding, we now understand like never before why people get age-related cognitive decline. And of course, go into this in the book. We understand better.

What's your status with respect to energetics, blood flow, oxygenation, ketones, metabolic flexibility, et cetera? Where's you status respect with to inflammatory conditions?

Do you have things like Borrelia, Bartonella, you know, metabolic health issues, a metabolic syndrome, leaky gut, all these things? And then finally, toxicity.

This is a huge one. Just actually got off a meeting with Dr. Heather Sandison and others that we work with. And one of her points was looking at people who'd gotten hair coloring, looking their toxin load right before the hair-coloring and right after, striking differences.

There have been studies in neurodegeneration showing cosmetology is one the risk factors. So we're understanding these things that are coming that we are exposed to and by the way microplastics of course coming up as a significant issue now not only are these micro plastics being concentrated in the brain more than the liver more the kidney.

but they are also turning out to be associated. Now it's not clear that it is causal yet, but there are clearly associated more microplastics associated with more dementia.

So we understand these things like never before and we're seeing remarkable outcomes like ever before. Amazing. So to get a little granular in Alzheimer's, sixth leading cause of death in the world, excuse me, in US, seventh leading causes of deaths in a world today, it has been called the most expensive disease because of its direct and indirect causes.

It's also been stated that by 2030, half of Americans will have some form of symptomology of neurodegenerative disease. Alzheimer's is no longer thought of as a primary disease of the brain.

It's thought more of a disorder of immune system within the brains. Can you take the baton and run with that now? Absolutely. So what's really fascinating is as we looked, we spent 30 years in the lab looking at the molecular biology that drives cognitive change.

And what we found was fascinating. If you look right down the list, you literally have a systemic response. As you said, it's an immunology, but it even goes beyond just immunologist.

What happens is you have whole set, just as you would go from sleeping to wakefulness.

Alzheimer's as a Systemic Disease

So you've got one mode for sleeping, it changes your hormones, your respiration, everything changes during sleep, and then wakefullness is literally a mode switch.

In a similar fashion, there is a mood switch between connection and protection. When you're doing well, when you have enough blood flow and enough oxygenation and not too much sleep apnea, not to much toxicity, you don't

have COVID, which has been one of the big issues, all these sorts of things, your brain is literally in a mode of connection.

and you can follow all the molecular biology of that. You make connections. you cleave your amyloid precursor protein at a single site to make two things that will literally say, okay, make connection.s You don't have a lot of blood clotting.

Your blood is flowing well. All these things work together to give you brain plasticity. Now what happens is when you then change, you've got COVID or you got inflammation, toxicity.

You literally can observe this change. now you are activating your innate immune system. You are dealing with inflammation. You're activating your microglia.

Your responding to oral microbiome changes that get into the brain. Literally, the Brain microbiomes is reflected by the oral micro biome. So you have similar organisms in the brains that you do in your mouth.

As you get periodontitis and you P. gingivalis, you find that in the brain. You find its products, things like gingipane, which is damaging to the in brain, so you literally switch this mode and it's at every level.

It's now more cytokines. Just as you said, You've got the activation of the innate immune system. Now you've gotten more tendency to thrombosis than before.

You change your tau from tau that's interacting. Tau is an amazing molecule in your brain and it's now an important test for Alzheimer's. When you're in good shape, when you are in that connection mode, your TAU is focused.

It's binding to your microtubules and is stabilizing them. So you able to put out neurites. When you now are in the protection mode, the tau is phosphorylated.

That pops the Tau. It changes its shape, it changes it's charge, It pops it off the microtubules, you collapse the micro tubules. And now, interestingly, phospho tau, is an anti-microbial protein.

So it is literally going around killing microbes. Unfortunately, its also a prion. In other words it begets more of itself. And so, which makes sense in that you're trying to deal with organisms that are dividing.

So you are enlisting more of your tau to become phospho tau. This is now a measure that can be measured in the blood. Your phosphor tau goes up as you get Alzheimer's and as your doing well it will start to now come down to normal once again.

So this is, as you say, this a systemic change. It's an immunological change, it's a hematological, change it a signaling, a signal transduction change all of these things are going on as your brain is trying to protect itself.

I think I've heard you saying that Alzheimer's is a full body system failure insufficiency. It's exactly, it's a network insufficiency. So you've got this beautiful network of 500 trillion synapses in your brain.

They have a supply, your blood flow, you mitochondrial function, all that. they have the demand. Now when you're doing well, Your supply exceeds your demand And unfortunately, when things change, your hormones are dropping and your toxicity is going up and things like that.

The demand is starting to go up because of inflammation and thing like. Your demand dropping because reduction in nutrients reduction hormones reduction neurotrophic factors blood flow.

oxygenation, mitochondrial function, ketone, ability to make ketones. So now what happens is you literally exceed the supply with your demand. This network is insufficient and it is literally downsizing.

So much to unpack there. But there's one thing I want to quote from your book, because I have a special little thing

for immune system in COVID-19. Six million people's records during the first year of COVID 19 pandemic in the US saw clearly that those who got COVID were at a significantly higher risk for a new diagnosis of Alzheimer's within the preceding year.

And this fits exactly with what you and I just talked about. When you get COVID, Your demand goes up and and your supply goes down because you often get micro thrombi throughout the heart and throughout.

The brain and so now you're getting a situation where you've got more inflammation and interestingly both in covid and in other causes of Alzheimer's.

you have a situation where the innate system is activated, but your adaptive system has not succeeded in clearing these various organisms. And in fact, as you probably know, the COVID organism itself actually has specific genes that will prevent you from an early adaptive response.

So what happens is you go along, essentially it hides itself from your immune system decreases your ability to make interferon early on and then boom, you finally, recognize this, and this is why people die of cytokine storm.

Your system suddenly recognize, oh my gosh, the interferon hasn't been on, I've got a overwhelming viral infection. And so it just turns on. So you literally, to survive, have to turn that down.

The death is from cytakinestorm, whereas as I pointed out before, that death from Alzheimer's is cytikine drizzle.

Pathogens, Inflammation, and Risk Factors

you've got a little bit of this inflammation going on for many, many years. So if I were to ask you a question, I'm a chiropractor, as you know, so I involve myself in functional medicine, laser therapy, and the like.

If I said to you my mantra is to manage and modulate inflammation, How would you take that statement and work within the framework of neurodegenerative disease?

Yeah, I would say that is a critical piece and you've probably chosen the most important thing to do. However, i would add two other pieces to that. As you are managing that inflammation, and by the way, some of the people that do great are ones who are on resolvins and they are And that will give you some really good short-term success.

For long- term success, as you know, you also want to find out what's causing that inflammation. So we have all the time, we'll find that people have got some inflammation, will be treating that, and then we will find, aha, they've got a tick-borne illness that hadn't been diagnosed.

We had a person where they had turned out they have a tic by 10 years earlier. had been treated for Lyme, but nobody realized they also had Babesia. So that had to be treated as well to get best outcomes.

Yes, great to treat the inflammation, and you also want to support the adaptive system to clear these various organisms. but you also wanna make sure what's causing this.

Is this a leaky gut? Is there chronic sinusitis? You know, is this metabolic syndrome? What's that causing that inflammation and deal with that? And then as I said, to support the adaptive system, so making sure they have enough zinc, making they sure have enacetylcysteine, glutathione, the things that are critical, omega-3s, all these things, that're critical for your adaptive systems to do its job.

But you're absolutely right, The common feature you see in these neurodegenerative diseases is that you've got some inflammation there and you need to figure out why and deal with that.

It would be fair to say that the basis of neuro-degenetive disease is leaky gut because the gut and the brain are bidirectional. And some data indicates that the expression of lipopolysaccharide, LPS, releases amyloids.

And then we've got a lot of data that indicates the gut, the lung, and the gum, which you're talking about in all the different microbiomes, causing the release of these different bacterias, possibly Candida as well and Alzheimer's.

So why don't we discuss the concept of the pathogen and its adverse effect on the brain? Absolutely. And so as I mentioned earlier, you know, this is about energetics, it's about inflammation, its about toxicity.

Those are the big three. Uh, and as you said, there are multiple microbes. So of course the hope initially was this was going to be like tuberculosis.

It would always be the same organism. That has not turned out to So there are, just as you said, there multiple organisms coming from multiple sites that all increase your risk for Alzheimer's.

As an example, Professor Ruth Itzaki from the UK has spent her entire career showing that herpes simplex HSV1 coming the lip is highly associated with cognitive decline.

And in fact, There's a study out of Taiwan showing the people in midlife who had outbreaks If you take the ones who treated them and the one who didn't treat them, the once who treat of them were at more than a 50% reduction in their likelihood to develop Alzheimer-related dementia.

So treating these is actually a good idea. Herpes simplex, big player. P. gingivalis, as we talked about before, from periodontitis. T. denticola is another one.

There's a beautiful study looking at the normal microbiome in the brain. Of course, I was taught many years ago, there should be no organisms within the brains, but it turns out that's incorrect.

They are there and they mostly reflect what's going on in mouth and in sinuses. So that is important. As you said, leaky gut, LPS, so important, and then things like tick-borne illnesses, Borrelia, Bartonella, Babesia, ehrlichia anaplasma, and as you mentioned candida.

Candida is another big one that is found frequently in the brain and of course something that you that's common with the gut, common as part of dysbiosis, is common in high sugar diets.

So all of these things are assaulting the brain and insulting the. And as you indicated, this is a common way to die. Unfortunately, in the UK, Alzheimer's is the number two cause of death and in UK women, It is the number one cause of death of all causes.

If you look at over a million people have been killed by COVID in the United States, about 45 million of us of the currently living Americans will die of Alzheimer's disease if we don't have better approaches to this, which is why we like to find it early.

get in there early, get people on an optimal program. And this is why I wrote the book. The whole idea was, how do we ensure that all of us have a brain span that's as long as our lifespan?

Great, if you want to live to 100, 120, whatever it is, make sure that you don't spend most of that time in a nursing home. Let's make that sure you have an optimum cognition.

There is so much now that can be done to achieve that, that it's really It's criminal almost to be just letting this go and not look. You can look, there's plenty to do.

We've trained over 2,000 physicians from 10 different countries and all over the US. So I encourage everyone, everyone who's 35 or over, please get evaluated Get on active prevention or early treatment.

If you begin to have problems, don't wait. This old idea that there's nothing you can do, so you might as well wait, that is really antiquated approach.

To get back to what you said before about the P. gingivalis, my understanding data reveals that 90% of people, and I've got it, have P gingivitis. have Alzheimer's.

So there is an association for sure. But what you will see is there are a number of people that will have some P. gingivalis in the mouth without getting Alzheimer, but you're right, it absolutely increases your risk.

And we know that one of the things that the P gingivitis organism, the bacteria makes is something called gingipane. It is a protease. degrading proteins within the brain, and that is associated with cognitive decline.

Now there's a company that actually produced an anti-ginger pain, essentially a drug that would prevent this. When they tested it, unfortunately, they test it as a monotherapy.

There's much more to Alzheimer's than just one thing. We've got to optimize the nutrients, we've gotta optimize oxygen, and we gotta optimized things for people.

And again, I go into this in the book, the things to do and give a couple of examples at the end of how you can continue to well for your whole life. But you're right, P.

gingivalis, no question, increases your risk markedly for cognitive decline. Something that you said earlier, I took it from your book, by the way. The vast majority of cases found in America are over the age of 65. However, There's a 143% increase in diagnosis between the ages of 55 and 64, 311% increased in diagnoses between 45 and 54 years of age, 373 percent increase and diagnosis, between ages 30 and 44. It kind of sounds like nobody is protected from this possible condition.

Testing, APOE4, and Early Detection

Yeah, isn't this amazing? So we used to think when I was training many years ago as a neurologist, we thought that the Alzheimer's was quote, old timers.

So, you know, You get it in your 60s, 70s 80s or 90s. Now what we know is you actually are getting this in Your 30s 40s and 50s but you can do but it typically isn t diagnosed for 20 years or so.

And by the way, We never when i was Training again way way decades ago, We never saw people in their 30s, 40s and 50s with Alzheimer's. Now it's one of the most common things we see.

We see early 50's, late 40's all the time. And the question is why such an increase? The epidemiologists, just as you quoted, the epidemiologist have shown us that the biggest year over year increases are in people in their 30s, 40s and 50s.

That's not to say that's most of the cases. Most of cases are still being diagnosed in the 60s or 70s but lots and lots of people are 50. So the jump up has been in 30 somethings 40 something and fifty something.

And there may be a number of reasons for that. It may changes in insulin resistance, more childhood obesity, More diabetes and pre-diabetes, because these things are all associated.

it may more exposure to some biotoxins than ever before. Whatever it is, it's very clear that younger people are getting Alzheimer's. And the good news is we can see it coming.

There are good blood tests for this, as I mentioned earlier, and people will say, well, I don't want to know. No, we should know because it'll actually prevent you from ever getting to the point of having dementia.

The reality is dementia should be a rare condition. As you mentioned, earlier it's a very common condition, but it should much more rare and it can be much rarer.

Let's set the test for the conversation for testing. One of the biggest things I talk about are genetic tests. A great

genetic test to test forward would be the APOE status.

Why don't you take us through the three options? Great point, because that is the most common. There are about 100 different genes that are associated with Alzheimer's risk.

But the more common by far, and the one that really has a big impact that we see all the time, is APoE4. So when you you inherit one copy of APOE from your mother, one, copy from you father, of course, and so you can check yourself in the ones are typically two or three or four.

So, for example, I check myself. I'm an APA we three three, which is like vanilla. It's the most common one. If you have zero copies of APOE4, and that's three quarters of the population, your risk during your lifetime is about 9%. It's not zero, but it's no too high.

If have a single copy, that is 75 million Americans, most of whom don't know it. We should all know our APoE status. You have single copies, you're lifetime risk is 30%. So clearly much higher and you wanna get on active prevention when you turn 35. And then if you've got two copies and that is 7 million Americans, the vast majority again don't know it, your chance is about 90%. Most likely you will develop it.

Now the great news is we've gotten a lot of people, there's a whole website, APOE4.info started by Julie G. who is an APOE-4 for herself. She developed symptoms in her late 40s.

she's now in our 60s and doing great. He took her cognitive testing from the 35th percentile to the 98th. percentiles, she is brilliant. And she continues to do well.

Now she has been on this approach for 13 years and continuing to absolutely great! So again, this is why everybody should know their status and understand what's going on.

The great news is we understand more and more about why APOE4 is associated with cognitive decline, so we can understand, more than more, what to do about it.

So I want to emphasize what Dr. Bredesen said. Number one, he and I both agree, you should test for your APOE4 status. You only have to do it once. And number two, the answer, unless you, of course, have an APoE2, which is less than 1% of the population, is to lead a healthy lifestyle and adhere to your recode protocol.

Before we unveil that, I know I have a buddy in Switzerland who said, ask him what set of tests I need to really allow me to have it reveal if I had a susceptibility to Alzheimer's.

And you talked a few of them, the amyloid, tau, etc. So if you go through those, that would be fabulous. Great point. So we break these down into two groups.

One of them tells you if you have it, and the other one tells why you are at risk for it. The first group, which is the if, that's your current status, is what I mentioned earlier.

It's called brain scan. That's the most sensitive one. You can actually get it directly. I had a person come to my home and draw it at getabrainscan.com, easy to do.

It has, it's three things. Its p-tau-217, as I mentioned, your tau changes from tau to phospho-tau. When you have these various organisms, when you're fighting these things, you are making this anti-microbial protein phosphotau, and that's what's picked up in the blood.

And so it will start to go up as you dealing with these thing. And so you want to know your p-tau-217. Now, complementary to that is one called GFAP, glial fibrillary acidic protein.

That is a measure of the ongoing inflammation and attempted repair in your brain. It's a very early marker, it's not a specific marker but it is a sensitive marker.

So the two together give you a lot of information. Then the third one is called NFL, neurofilament light. That tells you specifically is there ongoing damage to your neurons.

So one is more of a glial marker for inflammation, one more is a neural marker of damage, and then the other one specifically for the process of Alzheimer's related phosphorylation of tau.

Now some people will add a fourth, which is A beta 42 to 40 ratio. That is an early marker. The one negative about that one is there's very small changes when you're starting to go down the cognitive decline route.

So those tests are critical for knowing. Then you'll know, we've got a very nice report on this that will tell you, here are the issues. That tells you where you stand.

Now you wanna know, okay, what about my future? If I've already got symptoms, am I headed downhill? if I don't have symptoms am, I at high risk? And that is where we get, you mentioned the recode report.

So that's recodelabs. These are specific labs that are looking at the things that I mentioned. They're looking energetics, inflammation, toxicity. And in addition, they're at neurotransmission, they're looking at neurotrophic activity, are you supporting your brain?

And then they are looking, is there a lot of stress? Stress has turned out to be, surprisingly to me, it's turned to out be a player in cognitive decline and brain atrophy.

So these are the tests that we'll give you. So you want to know your HSCRP, you wanna know you're fasting insulin, and you know, your homocysteine. You wanna to your mercury status.

There are dozens of things and they're all very simple together in a blood test that will look at these things for you, And with that combination, you know where you stand and where your headed.

And then you what to address. The ones that tell you where are headed will tell what you address, ah, if your methylation is not good and your homocysteine is high, then address that.

If you've got specific toxins, address those.

Stages of Cognitive Decline and Treatment Window

So the great news again is like never before, we have the ability to prevent and reverse cognitive decline and the earlier you start, the easier it is to get a very good outcome.

you can make a change. You're not going to go on for perpetuity and not know who your son is, your grandson, et cetera. Now, interesting, you talked about the tests.

I've read that the test that you've mentioned kept her or tanned Alzheimer's up to 20 years. Is that correct? That's right. So you start getting changes that can actually see.

What's happening, the biochemistry in your brain starts to shift from that connection mode to that protection mode that we talked about before, about 20 years before a diagnosis of Alzheimer's.

Then you go through four stages. So in fact, your window of opportunity is quite large. The first stage, when things just are beginning to change biochemically, you have no symptoms.

You can already pick up changes in spinal fluid, PET scan, and on those blood tests I mentioned, but you're asymptomatic. Of course, that's when you wanna get it.

You wanna to get there early and all of those people do very well if they get on the right things. The second stage then is called SCI, Subjective Cognitive Impairment.

By definition, you know that something isn't quite right. you may be having trouble with phone numbers or forgetting your keys or something, but, You're still able to score within the normal range on cognitive tests.

On average, that SCI stage lasts 10 years. So again, you've got that this is jump in. If you haven't done it for prevention, jump-in then because we get virtually 100% of these people to get better.

The third stage is called mild cognitive impairment, MCI. It's too bad they called it mild, cognitive, impairment because as one patient said, there's nothing mild about it.

At this point, your not able to score normally on cognitive tests and each year, about five to 10% of the MCI people go on to the fourth and final stage, which is the dementia stage.

By definition, the difference is with MC I, you are able to do your activities of daily living. You can take care of yourself, balance your checkbook, drive, things like that.

In dementia, You cannot. So you're now starting to have trouble taking care yourself. We do see people even in the Dementia stage who turn things around and do well.

And we've had even people going to assisted living go on the protocol we developed and become independent again and come out of the assisted living. And Dr.

Heather Sandison, who opened the first one of these called Marama, has done a fabulous job with this. So even at that time, you can get some improvement.

But of course, it's easier the earlier you start, just as you said. Outstanding. So, unfortunately, the medical approach, medical model to Alzheimer's seems to be a single pathway, single lane, providing, hopefully, a miracle cure.

It appears that your answer is multimodal. So let's go through some of those modes. Let's start with sleep, where the detoxification process occurs during sleep.

Great point. So as you said, the approach in standard of care medicine has been we're looking for a silver bullet and there hasn't been a Silver bullet.

What we are saying is you need silver buckshot. You're going to hit multiple things. And so we think of this in terms of seven basics. and two specifics.

And those are diet, exercise, sleep, stress, brain training, detox, and some targeted supplements. Then the two specific are various pathogens and toxins.

So sleep as you mentioned, is one of the underappreciated things. People say, well, look, I get sleep. Well, the sleep has a quality to it. You want to have at least seven hours of sleep each night, with at least one hour of deep sleep, which helps during detox, improving your brain.

You want to have at an hour and a half of REM sleep so that that supports memory. And then you want make sure that your oxygenation while you're sleeping is at least at 94%. We'd like to see 95, 96, 97. I worry when people are dropping below 92, we see them in the 80s, and we even see him into the 70s.

And your brain is just not getting enough oxygenation. This is why sleep apnea, which by the way, in The United States of America, sleep Apnea goes undiagnosed about 80% of the time.

So we're missing most of the people who have sleep apnea. People say, well, I don't snore that much, so I probably don' have it. Well, you may or may not have.

So this is why wearables, things like an Apple Watch or a Garmin or Fitbit or an Auraring, these are helpful. Oh,

wait a minute. When I was sleeping last night, my oxygenation was way down at 88%. What's going on here?

If there's a question, you can do a sleep study, no problem. And you're absolutely right, sleep is a critical thing. The very first patient we reversed, which was back in April of 2012, the very person came to me.

And she had come out from Washington, and she was clearly having problems. Her mother had died of Alzheimer's. She was having trouble herself. And one of her big issues was they were sending her overseas.

You work for the US government, they would send her oversees. she Was getting very poor sleep, you know, four and five hours a night. That was one Of several things that as that was corrected, she's done very well.

By the way, She's just turned 80 and now been 13 years doing great. And she is walking across America right now to bring awareness to the fact that cognitive decline is preventable and treatable, unlike what's being taught in medical schools.

And so you can look, you could see you go to Judy walks.

Multimodal Prevention: Sleep, Exercise, and Diet

and you'll see where she is walking across. We actually just started with her on April 5th in San Diego, walking out from there. She's an amazing, amazing person who's done bike marathons and running maratons now at the age of 80 walking around the country.

That's a great story. Congratulations to her and thank you. It must be really rewarding to do work like that because you can get all the accolades, you could make a few bucks, but nothing's better than making an indelible mark on a human's life.

So congrats on that. You covered the sleep really well. Let's talk about exercise. What kind of exercise? Weight resistance, high intensity interval training, aerobics, because we do know that muscle mass is the currency of longevity.

No question about it. So what's turned out to be really interesting about exercise is it has different mechanisms. We're all always interested in the biochemical mechanism.

What happened? What molecule interacted with what molecule, et cetera? So as you said, strength training is critical. And one of the things that that does is make you more insulin sensitive.

Insulin sensitivity is a key part of optimal brain function. then aerobics improves blood flow and oxygenation. And in fact, one of my favorite things is to recommend EWAT, exercise with oxygen therapy, because you get a double shot here.

You're increasing the blood flow and you're increase the oxygenation. So many people find that E-Wat is very helpful for them. And then the other thing that's interesting is these katsu bands.

These things are resistance bands, they will increase the bang for your buck. So with a certain amount of muscular activity, you'll actually get a better impact than if you do it without the resistance bands.

Some of the Olympians use them as an example. These various forms of exercise, and I would add as a third type, so you've got the strength training that you mentioned, aerobics, but then you've also got the coordination related activities.

And this is why people say things like ballroom dancing, ping pong, things that are actually quite good for the aging brain and actually help you to stay sharp.

Again, going back to the book, the idea is to get everybody to have their entire lifespan with a functional brain.

Outstanding. Let's talk a little bit about diet.

It has been said there's two types of energy sources for the brain, carbs and fat, i.e. ketone bodies. I've heard a few people say that carbs are dirty fuel, ketones are clean fuel.

And I know you have a specific want in reference to the type of the energy for brain and also intermittent fasting if you could mix that in as well. Great point.

So what you want is for metabolic flexibility. My wife is an integrative physician, and she actually taught me many, many years ago. It's not just about getting ketones up.

it is about metabolic flexible. Your brain is like a Prius. You got two forms of fuel, as you said, it's glucose, its ketone. What happens, unfortunately, with the standard American diet and lifestyle, you become insulin resistant.

And the problem is that ruins both of these sources. So you've got your brain going along nicely, going back and forth, you go to sleep, get a little ketosis, no problem.

You have some intermittent fasting, great, make ketones, clean things out, everything good, go back forth. Now what happens as you have a standard American diet and lifestyle?

you start having too many carbs, often too much fructose, and frucose is even worse than glucose, high fructose corn syrup, worse then glucose. And so what happens then is your insulin goes up, you become insulin resistant, your insulins signaling goes down, You can actually even measure that change in your biochemistry.

That's been published in beautiful studies. And so what happens then is you're now unable to respond to the carbs you are eating as well as you did before.

So you've lost that. You actually look on a PET scan, that is the signature of Alzheimer's, reduced utilization of glucose in the temporal and parietal lobes.

But because of the high insulin, it prevents you from making ketones. So now you've got a Prius that's sputtering. You don't have either. So when we treat people, the first thing we're trying to do is bring back the glucose, insulin sensitivity, metabolic flexibility, and the ability to make and utilize ketones.

Now you're hitting on all cylinders again. So when I see people who have cognitive decline, to me that's an emergency. They're sputtering, they're not getting that ability, and we bring that back.

As you mentioned, one of the ways to do this is through intermittent fasting. It's also a plant-rich, mildly ketogenic diet, high in phytonutrients, both soluble and insoluble fiber, supportive of the gut microbiome, healing of gut.

All of these are sorts of things that are going to improve that. But there's a paradox you have to be aware of. Because we're talking about a network insufficiency, just as we talked about before, you have to be careful when you take someone who's frail and then you say, okay, now you're going to fast because we want to make you more insulin sensitive.

That can make them worse. This is why. At the beginning, just give them some exogenous ketones. You can get this through organic coconut oil, you can this get through MCT oil.

Now you've at least got a source of fuel. Get into the intermittent fasting and bring back your insulin sensitivity once again. Be careful in the frail people.

You can have a problem. So make sure you've got enough support. And now ultimately you'll be able to make your own ketones endogenously, but at the beginning you can't because of that insulin resistance.

Just be careful. That's the paradox for people who are fraile, low BMIs, things like that. I think you've coined the

phrase very aptly, keto flex. And I'm also going to speak for you by saying, please don't eat three hours before you go to sleep and try not to eat within the first hour of waking up.

You have the 12 hour intermittent fast, and that's a great starting point. So Eureko does a lot of supplements. Let's do this a little differently. I'll spew one out and you'll give me a rapid fire on it.

Lets get it going. Some of the supplements, methylated B vitamins. Yeah, great for reducing your homocysteine and that improves your, reduces brain atrophy.

Very important, very important for detox, Very Important for inflammation and for vascular status. So they're helpful in numerous ways. Vitamin C. Great as an antioxidant, protective and very helpful and detox.

Vitamin D. Yeah, multiple effects. Effects over 700 different genes. Enters the nucleus, interacts with its receptor, and changes the production, including things that are supportive.

They're anti-inflammatory, that support your immune system. So very good for things like preventing COVID. Very good. It has an anti tumor effect. Of course, it has calcium-related effects.

So, multiple effects of vitamin D. Vitamin E. Yeah, vitamin E, and especially mixed acopherols and tocotrienols. Very good. This is an antioxidant specifically for membranes and lipids, whereas vitamin C is for water soluble, the aqueous part.

These are very much complementary, supportive of your vascular system. K2. K-2, important to take a hundred micrograms at least if you are taking atleast a thousand IUs of vitamin D.

If you don't take the K 2 with the vitamin d, you can end up with calcium in your vessels. This will make it sure that it gets to the right place, to your bones, as opposed to being in the vessels, so K two, very helpful.

omega-3 fatty acids and how much. Yeah, great point. Typically, so these are things that have a wonderful anti-inflammatory effect, and especially the long-chain ones like DHA and EPA.

DHEA, very important for synapse formation, some beautiful work out of MIT showing that having the DheA is very helpful for synaptic density. The EPA, more important for anti-inflammatory effects and blood flow.

Now, how much? We like to target about a thousand for each of these. Be careful. If you're someone who has bleeding tendencies, you don't want to go up too high above that.

So for people who've had Brain hemorrhage in their family histories, for example, you want to stick there and you don't want it go up to two thousand three thousand.

Some people will go out to three and four thousand you wanna stay away from that now important related story is that the resolvins this was these were discovered by doctor charles searhead at harvard a number of years ago.

These are cousins of the omega-3s. And so as you're taking those omega 3s, you are increasing your resolvents, but you can also take pro-resolving mediators, specialized so-called SPMs, that will increase those as well.

When you've got that problem with cognitive change or with COVID, you got the situation where your innate system is on high alert too much. We want to bring that down.

And so Omega-3 is very helpful for that. Yeah, pro-resolving mediators. That's exciting. They allow for the resolution of inflammation. Lippoclast switch from, as you said, innate to adaptive immune system, fissures are supposed to convert so you can take them both together.

What about the theory that if you have an APOE4 variant allele, that you should double down on the amount of omega-3s that Yeah, the suggestion has been that you should then also include some phosphatidyl omega-3s,

things you can get, for example, from krill oil.

So, yes, this is a reasonable thing to do and including some, you know, phosphorylated omega 3s. This was suggested several years ago by Dr.

Supplements and Brain Support

Rhonda Patrick, and I think many people have been in support of that. Now, there hasn't been published trial on this, but I think it certainly makes good biochemical sense.

But choline, because it changed the microglial from an M1 to an N2. Great point. So cholene is really underappreciated. Most of us as Americans are low on potassium, magnesium, zinc, Choline and iodine.

Those are the big five. And if you check, you can look at, for example, a chronometer, free to do online. You can check and see each day your various nutrients, and it'll tell you how are you getting enough choline.

550 milligrams of choline per day. Most Americans are getting about 350 milligrams, of Choline Per Day. And you can get this with things like liver, eggs, things, like that.

Yes, having enough Cholene, because it is the precursor of Acetylcholine, which is, the most important neurotransmitter for memory. And it is low in people who have Alzheimer's disease.

So yes, getting enough choline. And you can take as supplements, cytokoline, or you could take alpha GPC, another way to take cholene. You could even take huperzine A, which decreases your ability to destroy the acetylcholine so it will give you more net cholin.

I like, especially early on, use the source of choli as opposed to preventing the the metabolism of your choline, the breakdown. So things like cytokoline and then, you know, pastured eggs, another great way to get this.

Re-choice. And then nose-to-tail eating, Another great to way get good cholene. Pre- and probiotics. Which probiotic do you lean more towards for cognitive effect?

Yeah, great point. And there's still so much ongoing work because probiotics are so complicated because, you know, is it really people have done a lot of work on acromancia, on bifidobacterium brevum, different species.

They're all in there together, working together and they're critics. So it's, as you said, probiotics, prebiotics, and now postbiotic as well. Things like urolithin A, very good for mitochondrial support.

It is a post biotic. These are things that are made by your microbiome. Some of the neurotransmitters, of course, made… So these things are working for you.

They're working with you. And this is why things like probutyrate, short-chain fatty acids, very helpful. So yes, prebiotic fiber, huge. Getting both soluble and insoluble fiber.

Very important. You can take things, like psyllium husk and things to increase that. Just again, a high plant-rich diet. For probiotics, things like seed is one.

There are a number of these that people have used one way or another, making sure that fermented food is probably the best way to get it. Things like sauerkraut and fermented beets and things that.

Excellent. And then checking, you can check your gut microbiome, of course. And as I mentioned, postbiotics, things like urolithin A that can be very helpful.

So all of these things for optimal cognition. I guess I'd be amiss if I didn't ask you about something for the brain called magnesium L3 and 8. Yes. Great point.

So again, most Americans are low in magnesium. It is important in terms of fighting COVID. Its your immune system. function and regulation. So all of these things are helpful.

It's a calming effect, also helpful for gut. We find many people who say, I've had constipation for years and just getting an appropriate amount of magnesium, it's gone.

They're fine once again. Now, things like magnesium glycinate, good for your gut, and good systemic things. What happened was there was a group working years ago, looking at brain function, finding that getting the magnesium into the brain by linking it to threonate, and so they started this whole magnesium thionate.

That doesn't give you a ton of magnesium. It's only 144 milligrams of but it's a better way to get it into your brain. So we tend to think of using both of those, some L3 and 8, that's fine, but you also don't forget your gut.

Don't forgot the other things. And yes, they've done a clinical trial and showing that people who had magnesium and 3 and eight did better with their cognition than those.

Now, these were not people with Alzheimer's disease, um, But in general, again, most of us are suboptimal in the magnesium in our brains. My friend follows all my podcasts.

He's very excited to find out what you had to say. So if I were to give him three things in Switzerland to do to change his trajectory towards Alzheimer's, what would you recommend?

Yeah, number one is to get the brain scan that I said before, the blood test to tell you, where do you stand? And then do that every five years. It's not a big deal.

This thing's slow. So get it every 5 years, you'll see it coming. That's the first thing to do. The second thing is pay attention to those basics. Check your sleep.

Get a wearable. Wearables are really helping us to see these chronic illnesses coming ahead of time, seeing changes in our heart rate variability and things like that, and changes our nocturnal SpO2, oxygenation.

These are really, really helpful. Seeing changes to our VO2 max, these things are all really really help. So that would be the second thing. Look at these basics, sleep, stress, et cetera.

And then the third thing I would say would be to optimize your things like magnesium and your vitamin D. Get those basics taken care of because you'll be surprised.

People will all the time will say, gee, I thought that I was doing fine. But when I started optimizing things, I realized I wasn't.

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I was actually kind of hitting not on all cylinders. And doing the right things really, my gosh, have got more energy. Have got better sleep. Got better muscular tone.

Can do more. My thinking is clearly better. To remember that, the key takeaway here is we as a species have evolved to have these incredible brains. You can store more in your brain than over 2,000 home computers.

So what's happened is at every step of evolution, we have really optimized. The brains are like these amazing sports cars, like a race car that you're driving at 220 miles an hour all the time.

You've got to take good care of them because they are operating at such a high level. And so what happens is so many of us are operation these things at kind of halfway.

So yeah, we can do basic things. But when we optimize these parameters, wow, We notice the difference. Jeff

Bezos takes Rob Silverman, puts him in space, and leaves me there for 18 to 24 months.

When I come back down, what's Dr. Dale Bredesen going to tell me in the next 24 month has happened to Alzheimer's and your work? Yeah, great point. This is a time of great progress.

After so many years of nothing, we've got the new blood tests that I mentioned, an ongoing randomized clinical trial at six sites, the early data showing statistically significant improvements in people that are on the protocol.

We're seeing changes in What we, our armamentarium, what we have to use, things like homotorine, which seems to be helpful for people who are APOE 4-4s, the ability to deal with Gal-3, Which is one of the markers for inflammation.

So new things that are available all the time. Some of these various red light therapies. I know you're involved with some light therapy. These are activating your mitochondria among other things.

By the way, mitochondrial transfusions, they are coming, and these are gonna help support. So there's another thing, which when you come back in two years, probably will be available.

There are things that are new things coming all the time. This is a time of great progress. We're going to see a times when dementia is rare, rare condition, just as it should be.

I'm excited about that. By they way everybody, The ageless brain. I've read it, I recommend it. It's an easy read, it's informative. it is going to change your perception on our brain health and how Alzheimer's is not a slippery slope, how we can reverse mild to moderate Alzheimer.

Wow. Just keep going, keep standing. Keep setting that trailblazing position that you have. I appreciate all that. You've done. Thanks for taking time.

Everybody, Dr. Dale Bredesen, the ageless brain.