Introduction to the Masterclass and Guest

Welcome to the Heal Your Brain Masterclass. I'm your host, doctor David Jockers. And today I've got the honor of interviewing doctor Dale Bredesen. And we're talking about the best strategies for Alzheimer's, dementia, and other brain disorders.

If you don't know Doctor Bredesen, he is a New York Times bestselling author. He wrote The End of Alzheimer's, and he also wrote the End of Alzheimer's program.

And he's the developer of the Recode Protocol, the only clinically proven protocol to reverse cognitive decline in early phase Alzheimer's. You can find his website, Apollo Health Kokum.

And again, we're talking all about the best strategies for Alzheimer's, dementia and other brain disorders. We're going to talk about the root cause factors for neurodegenerative diseases.

We're going to talk about where modern medicine gets Alzheimer's wrong. The key foods and nutrition strategies for brain health, and key lifestyle strategies to improve cognition and memory.

You guys are in for a treat here. But this interview with doctor Dale Bredesen. So without further ado, let's go right to it. Well, I've got doctor Dale Bredesen.

Here he is, a New York Times bestselling author of The End of Alzheimer's and the End of Alzheimer's program, new book that he just recently came out with.

And these are amazing books. If you're looking to improve your brain, you definitely have to get these books. I'm currently reading the End of Alzheimer's program.

Fantastic book. And Doctor Bredesen is also the developer of the Recode protocol, which is the first protocol to enhance cognition and reverse decline at any age.

So, Doctor Bredesen, really excited to have you here, excited for this conversation. Thanks so much, Doctor John. Great to talk to you. Absolutely. Well, let's start with what patient results you've seen in your years.

Studying the Recode protocol. Yeah. Great point.

ReCODE Results and Cognitive Improvement

So of course, when we started, we, we actually started this with a, request for a clinical trial and got turned down by multiple IRBs because, of course, the standard of care is you do one thing.

You give one drug or one, you know, one instrumentation, whatever you're going to do. And what we were arguing from our 30 years in bench research was that if you look at the signaling that underlies the cognitive decline, that's ultimately Alzheimer's disease.

Then what you see is that this is really, at its heart, a network insufficiency. There's a whole set of things that drive this neuroplasticity network, and that it includes things like, specific pathogens and ongoing inflammation and toxicity and insulin resistance and, atrophic loss of various, growth factors and hormones and nutrients, all these things.

So to make this system work, you've got to do all these things. And so we actually just published in the Journal of Alzheimer's Disease. So peer reviewed publication on a trial where 84% of the people actually improved their

cognition.

So we're very excited about that. That hasn't been seen before. As you know, the typical drugs don't improve the cognition. They don't and they don't even stabilize.

But what they do at their best is slightly slow. The decline. So we've seen this again and again, hundreds and hundreds of people. We actually published 100 examples.

Back in 2018, we published the very first examples back in 2014. And we've had people go from Moca scores which go from 0 to 30, go from Moca scores of 18, which is significant Alzheimer's, to a perfect 30.

Now that doesn't happen in everybody. And we're trying to understand what are the critical variables here. But we do see repeatedly people get better and most importantly, stay better.

We've had people now on this program for ten years who have continued to have their cognitive improvements. Well that's amazing. I mean, that gives us so much hope.

84% improvement. That's absolutely remarkable. And you know, we know that Alzheimer's is really growing. It's rapidly growing. I mean, what are the statistics look like?

I think it's something like I mean it's growing so fast. I heard some sort of statistic where it's going to be like 30% of Americans by the year 2050 or something like that.

Yeah. You know, and I should mention also we also saw MRI improvements. So improvements across the board. But you bring up a really good point because people often forget in the middle of a pandemic that yes, the pandemic has killed over a million Americans.

The current statistics hold the currently living Americans. 45 million of us will die of Alzheimer's disease. It has become. That's Doctor Christine Jaffe from UCSF has shown the third leading cause of death, although it's typically quoted as the sixth or seventh leading cause of death.

She looked at serial autopsies and showed that it's actually the third leading cause of death. By the way, it is number two in the UK, and for women in the UK, it is the number one cause of death.

So it is incredibly common. It really dwarfs the Covid 19 epidemic, unfortunately. And of course it's just slower than a typical Covid case. So what we if we don't do something about this, if we don't get better with prevention and reversal of symptoms, then we're going to have a huge number of people continue to die.

Alzheimer's Growth, Stages, and Early Symptoms

And one of the important points here, you mentioned the on the rise. It is especially on the rise in young people. In the, people who are in their 50s.

When I was training in neurology, which is way back in the 1980s, we never saw people in their 50s who had a diagnosis of Alzheimer's. You just didn't see it.

It was it was a disease of your 60s, 70s, 80s, 90s. We now know that it starts the pathophysiology starts about 20 years before a diagnosis of Alzheimer's.

But in addition to that, we are seeing one of the most common presentations is people in their 50s, often in their early 50s, who come in with Alzheimer's disease.

And that's been pointed out by the epidemiologists. That group is especially on the rise. Yeah. So many more people are getting Alzheimer's. And so what are some of the early symptoms that people might be experiencing?

I mean, even in their 20s, 30s and 40s leading up to obviously, you know, cognitive decline and then eventually Alzheimer's. This is a great point. And, you know, it's unfortunate because there has been nothing to do about it.

People keep reassuring you and saying it's probably not Alzheimer's. It's probably not Alzheimer's, which is the opposite. Everything in this field has been backward.

Assume that it's not. Don't do. You know, do small data sets, give a drug instead of looking at all the different things? So this is really been a pretty backward field for a while, unfortunately.

So you're right. What happens is we begin to get these changes and people will tell, oh, you know, it's just you're just getting a little older. And unfortunately with, as you know, many 20 somethings are already, insulin resistant.

They've already got ongoing, inflammation, whether it's from an oral, microbiome or from leaky gut. And this is so common. Now, these are set ups for down the road what is going to become Alzheimer's.

And I should mention, as an aside, the big problem here is Alzheimer's occurs in four stages. And the problem is that we physicians focus on the last stage when we should be focusing on the first stage.

Yeah. So stage one, you have a period, for several years where you are asymptomatic, you have no symptoms, but you can already show changes in Pet scans and spinal fluid.

Now we're getting better blood tests. So people will be able to check this even in their 20s and 30s when these are things are just beginning to change.

Second stage is called sky subjective cognitive impairment. And the epidemiologists have shown that lasts about ten years. You know that there's something wrong, but you're still able to test in the normal range on your cognitive testing.

And so that's really when you want to jump in. And we see virtually 100% of the people who have Sky we can return to complete normalcy. They do very, very well.

But again you don't go in at that time. The third stage is called MCI. We hear about this a lot. Mild cognitive impairment very unfortunate term because it's just like telling someone don't worry.

You only have mildly metastatic cancer. That's really what this is. This is a relatively late stage. And they by the definition of that is now you're scoring imperfectly on your cognitive test.

Suboptimal. But you are now continuing to have your activities of daily living. You've preserved those. Then the fourth and final stage is what we call Alzheimer's disease, where there's now dementia.

And now those people have impacted their activities of daily living. And so that's the that's when most people will then seek out, you know, seek out medical care.

I just had an example just a couple of weeks ago, guy who's a physician himself who really was in that fourth stage already went into his doctor and his doctor said, oh yeah, don't worry, this is just normal aging.

This is what to expect. Oh my gosh, this is so misguided. This guy had already gone through stage one, two and three and was already into the fourth stage.

And by the way, he turned out to have normal pressure hydrocephalus as well as Alzheimer's disease, which had never been, never been checked and recognized.

So it is critical, as people know, you know, as you and I know, you start knowing that something is not right with your brain. You need to get evaluated because there are a lot of things you can do to optimize it.

And we're seeing it now with brain fog in Covid 19. So many people come away with brain fog. So so this is the basically the way you see this and the as you mentioned the presentation, it comes in two groups.

About two thirds of people will have an amnestic presentation. They can't learn new information. They remember who they're for. They may remember who their first grade teacher was, but they don't remember what they had for dinner last night.

They don't remember where they put their keys, those sorts of things. About one third of people will present with a non amnestic presentation. And those are problems with organizing.

So executive dysfunction, problems with with recognition of faces. Prosopagnosia problem with recognition of objects, problems with word finding so-called primary progressive aphasia.

And and then various other things that are like for example, dyscalculia, things that are more parietal lobe symptoms instead of the amnestic presentation, which is more of a temporal lobe presentation.

And those ones that have the non amnestic presentations are at risk for for having a toxin associated cognitive decline. So we want to look especially carefully at the non amnestics for toxin association.

Yeah that's really interesting. And I know like some early symptoms if you're in your 20s 30s 40s if you're dealing with brain fog for common forgetfulness you can't remember where your keys are your phone.

And this is having commonly then that could be symptoms. Sleep disorders are really big. If you're not sleeping through the night effectively anxiety, depression, all of those things can't.

There are signs that your brain is inflamed. And, obviously we've got to get to the root cause there. Otherwise, over time, that inflammation is just going to burn down the brain, and then eventually the body's going to do what it needs to do to try to repair, which is put in these amyloid plaques.

Six Mechanisms Behind Alzheimer's

And, you know, that's but, you know, by that time, like you said, it's like 20, 30 year process. That's when you finally get mild cognitive decline and then eventually, full blown Alzheimer's.

And I know in your book you talk about six different types of Alzheimer's or six different mechanisms behind Alzheimer's. I found this very interesting.

Can you go into that in more detail? Absolutely. You know, so the classical approach is you just look at a very small data set and you say you got all timers, nothing I can do.

You're going to die. But here, take this pill. What we found in our research is if you now start looking at larger data sets. So you're not, you know, very much of a functional medicine or a precision medicine or an integrative medicine sort of approach.

You find that many of these people have leaky gut, have sleep apnea, have changes in their oral microbiome, on and on and on, and so as we did this, we found out, people can get to that same biochemistry, that synaptic loss and the poor signaling that we characterize as Alzheimer's disease.

But they can get there, as you said, from different pathways. So there is what we call type one or inflammatory Alzheimer's. And these people are typically presenting in their 60s with Alzheimer's.

And they've got high crp and things like that. They may have a high TNF alpha or IL one beta or things like that. It's an inflammatory process. And by the way, the amyloid that you mentioned is part of the innate immune system.

So just as with Covid 19, you have a mismatch between the in the inflammatory part, the innate part of the immune

system and the adaptive system, which hasn't cleared the pathogen.

So just as in Covid 19, you die of cytokine storm, in Alzheimer's, you're dying of cytokine drizzle. It slowly over years. Type two is a trophy. Very different.

These people don't have a lot of inflammation, but they have reduced growth factors like Bdnf and NGF. They have reduced hormones. They have reduced nutrients. Things like vitamin D.

And people with low vitamin D are unquestionably at increased risk for Alzheimer's disease. That's been published multiple times. Then there's a type 1.5.

We named it that because it has both inflammation and an atrophic feature. And that is glycol toxicity. You get the insulin resistance. So now your insulin signaling is reduced and that gives you some type two.

But you also get the inflammation of things like of non enzymatic glycated proteins. We measure it of course as hemoglobin A1 c. But of course hundreds and hundreds of proteins are glycated and they are inflammatory.

So that's type 1.5. Then type three is is toxic. And that could be inorganic. Things like air pollution mercury, things like that. The can be organics, things like glyphosate tar Ewing benzene, formaldehyde.

Or it can be, bio toxins, things like trigger theses or okra toxins. All of those can contribute to what ultimately becomes Alzheimer's disease. Type four is vascular, and it's very clear that there is an important relationship between vessels and Alzheimer's, which again, comes back to Covid 19, where there's this showing of course, of endothelial cells that are attacked and have complement on them and immune complexes.

It's it's really unfortunate. And then the final type, type five, which is traumatic. So people are at risk who've had, early head trauma that increases your risk not only for CTE, the, traumatic encephalopathy, but also for Alzheimer's disease.

And in that traumatic type, would that also include obviously concussions? That's what we typically think of. How about emotional trauma. Where does that kind of tie in.

Can that just trigger any one of those pathways? You know, this is such a good point because repeatedly essentially this, you know, amygdala damage, essentially this whole idea of stress and threat, as Doctor Clawson actually has pointed out repeatedly, stress and threat so important for cognitive decline and part of healing, part of getting better is not just addressing all the chemistry of this, but also addressing the healing.

You know, as someone was a lab scientist for many, many years, as well as neurologists, I never believed in this stuff about, oh, you know, it's important to breathe and it's important to do meditation and important and all this.

But I can't ignore the data. The data are very clear. This is a very important cause. And in fact, people who are under a lot of stress have an increased risk for cognitive decline.

And as you mentioned earlier, things like insomnia and things like anxiety, all these things are essentially forms of stress. Things aren't quite right.

Your system knows that you can't sleep or you can't function well. You have, you know, repeated anxiety, things like this. So these are all telling us something is not quite right.

We've got to get the system back into optimal function. Yeah. And let's talk about genetics. I know there's the ApoE four, which is that subtype is associated with a higher risk for developing Alzheimer's.

Where do the different I mean, ApoE is I think the, the main gene that's looked at obviously there's probably several others. But how does that play into these different, Alzheimer's types or these different.

Yeah, that's a that's a really good question. And so you have to basically divide Alzheimer's up into two pieces. There is just a tiny fraction. It's less than 5% that is truly full on genetic.

And it's just three genes AP personnel and one personnel and two also called one two. Those are the ones where everybody who has the gene gets the disease.

Now we're actually working with a few people who have those, and we're very hopeful that what we've done for the rest of the people, the sporadic side, which has worked very well, will work for these as well if you simply start earlier.

But it's going to take us time to know that. But for 95 plus percent of us, it is a sporadic illness where the genetics will increase your risk or decrease your risk.

But they aren't. It doesn't have a 100% penetrance. So in this case, as you mentioned, ApoE e is the most common genetic risk factor, and it's specifically the e4, the epsilon for a level of ApoE e, which gives you increased risk.

So if you have no copies of ApoE e4, which is about three quarters of us, for example, I check myself, I'm an E3 three, which is the most common. That's what I'm like.

Yeah. And your lifetime risk is about 9%. Now, of course, if you do the right things, you can drop that much lower. If you have a single copy and that is 75 million Americans, most of whom don't know it, your risk is now 30% for your lifetime.

So everybody should get this checked out and get on active prevention. Because this increased risk, you can drop it down to very, very low by doing the right things.

Get yourself a Cognos copy. Everyone knows to get a colonoscopy when you turn 50, please get a cock to be if you're over 40 and see where you stand so that you can make sure you do well for many years to come and then finally, if you have two copies and that's 7 million Americans, again, vast majority don't know it.

You're over 50% somewhere in the 70 to 90% category. So most likely you will develop Alzheimer's unless you get on active prevention. So we deal with a lot of people who are for fours who know they're at risk.

And so but again, this is not a fate. This is just a risk factor. And there are about 30 other genes that are at risk there. And there have been dozens more that identified recently as well.

So there are, you know, dozens and dozens and dozens of genes that have some risk. But by far the most common one is ApoE e4. Yeah. And some of the characteristics of Alzheimer's.

We see the neurofibrillary tangles, in the, in the neurons. We also see the amyloid plaque that's kind of built up in the brain. And what is it about ApoE e4?

What you know, there I obviously you and I both both are into functional medicine.

ApoE4 Genetics and Amyloid's Role

So we look at a lot of these genes and we think, okay, this provided some level of survival advantage. There must have been some advantage that our ancestors had when they had this.

Right. And so what is it about ApoE4 that predisposes them more to have a higher rate of Alzheimer's? And is there any benefit to having, that particular allele?

Yeah, there actually there is a benefit, especially if you live in a third world country. But, you know, it's just a setback for one moment. This is a really important point, because if you look at this the old fashioned way, which is unfortunately what's going on in places around the country, they go in and they say, well, something happened.

Your protein misfolded. We don't know why it is. It made some tau be phosphorylated. We don't know why it is. You've got aggregated proteins. We can remove it with an antibody.

And that actually doesn't make you better. We're just confused. What the heck is this all about? Because they're not looking at this physiologically. If you look at this through the lens of precision medicine and go back to basic mechanisms, your brain is not trying to kill you.

Your brain is trying to help you. So what's happened is you get exposed to these various insults. You have poor oral microbiome. And by the way, PE gingival us and others from the oral microbiome are found in the brains of patients with Alzheimer's.

So as I mentioned earlier, a beta, the amyloid beta peptide is part of the innate immune system, which now makes perfect sense. You start with insults, you've got inflammation, you got these various pathogens.

They get into your brain. Herpes simplex gets into your brain. As we know, various spiral keys get into your brain, various tick borne illnesses. These things, it's surprising how the access is much more than was ever realized before.

Now your brain responds and says, I'm being attacked. You start with an inflammatory response, which includes amyloid. And as Professors Robert Moyer and Rudy Tanzi from Harvard showed a number of years ago, this is an antimicrobial peptide.

So you're going now and you're covering this stuff and killing it with the amyloid. So you start seeing these plaques. It's not because the amyloid is there to hurt you.

It's actually trying to help you. Now the thing is it is a very much like what happened to our country with the pandemic. We were all told in early 2020, you know, you're going to socially distance, you're going to shelter in place, don't go to your job, etc., etc..

And of course, we went into a recession. This is just what your brain does. It puts down the amyloid and says, we got to pull back. We have got to go from a mode of growth and maintenance to a mode of protection and downsizing.

And so in fact, the first photo you mentioned, the the, the, the tangles earlier. And the reason you have those tangles is because the amyloid now, as it's saying, okay, pull back, pull back, we're going to we're going to now essentially it is a scorched earth retreat.

We're going to kill all this stuff, and we're going to have to live with a slightly smaller brain. It signals the AP, which is the parent of the amyloid signals, to tau, to say, phosphorylated.

And what fast food what does when you phosphorylated tau is? Tau is a stabilizer for microtubules. The phosphorylation pulls it off the microtubules and allows them to collapse rapidly.

So you're now signaling to your brain, pull back on those neuritis, which is exactly what you see. So you lose synapses. Now, what we found is that everybody who has cognitive decline associated with Alzheimer's disease is on the synaptic clastic side instead of the synaptic plastic side.

By analogy with osteoporosis. So all are we are doing is identifying all the insults. We're getting rid of the synaptic clastic signaling. We're enhancing the synaptic blasting signaling.

And people start getting better again. And as people have seen, they continue to get better and better. So that's so important because you know, really when we look at the health of the brain, healthy synapses may be more important than the overall, I guess you could say volume of neurons, the amount of healthy synapses or little gaps between the neurons really provides, strength and kind of a form of cognitive, reserve.

Right. Or cognitive, what's the word I'm looking for? You know, ability to adapt to stress, you know, and function well, even as we even as we get older.

And no question, there have been a number of studies showing that people with high cognitive reserve are more resistant to getting Alzheimer's. So, you know, there is a threshold there.

And as long as you can keep things going, and this is the reason for for all of us to continue to exercise, continue to get evaluated and make sure we don't have these various insults that are causing us to lose these synapses.

And again, there is just so much that can be done. There's this old idea that there's nothing that prevents, reverses or delays. Alzheimer's is turned out to be so wrong.

There is a tremendous amount. The armamentarium is actually huge, both for prevention and for reversal. The longer you wait, the tougher it is. Yeah. So amyloid really the way we need to think about that is more like in functional medicine.

The way we look at cholesterol, you know, cholesterol, we think about cardiovascular disease. Cholesterol has been blamed as the root cause. And they targeted drugs with statin medications to try to lower it.

But it's not the root cause. It's just what shows up when we have inflammation damaging the arterial beds, because it's like a bus bringing, fat soluble nutrients, phospholipids to help repair.

So it's kind of the same thing with the amyloid, where it's actually part of the immune system's response to try to keep infections under control. So we can't blame it.

It's what the body naturally needs to do to try to protect itself. What we got to do is obviously go upstream and look at the root cause factors there, and why it's being laid down.

This is an excellent analogy because what happened with these two things is almost identical. So what happens? We know that if you have a genetic cause of hypercholesterolemia, even though cholesterol is not the cause for most of us, in that case, the genetic cause leads you to think, it's the cholesterol that caused the problem.

The same thing happened when you have a mutation that in AP that gives you more amyloid, you do get Alzheimer's. So all the drug companies jumped on this.

Let's get rid of the cholesterol. Let's get rid of the amyloid. But it didn't work. These. Now to be fair, yes. In someone with familial hypercholesterolemia, it does help to lower that.

But but in Alzheimer's it hasn't. So it they didn't look upstream to say why did you make the cholesterol. Why did you make the amyloid? Because that's the key to understanding the disease.

Yeah for sure. And before you had said the ApoE e4 benefits us if we're living in a third world country. Yes. And that's because it's part of the immune system's response to potential pathogens.

Is that correct? So a ApoE4 turns out to be an absolutely fascinating illegal. And here's why. When we descended, we hominids descended from the simians.

5 to 7 million years ago. The chimps, for example, do not have, equally human for 3 or 2. They have a Bowie chimp. And there are. So if you look at the mutations that were associated with the appearance of hominids, as you know, it's a relatively small number.

We aren't the DNA is not that much different. And so, I mean, I told my wife, who's an integrative physician who loves your work, I told her, you know, my DNA overall is more similar to a male chimp DNA than it is to yours.

And she said, well, duh. Yeah. You guys both like the Three Stooges. You both like nasty and, you know, stuff like

that. So what happened was there's a small number of changes, and ApoE e4 was the primordial one.

So we were all for 96% of hominid evolution. We were all ape. We fought for it. And it's just been in the last 200,000 years that Ape only three has appeared.

And then in the last 80,000 years. Now, what we found in the lab and published a several years ago, ape, we had something really interesting. It actually enters the cell, binds to several receptors, enters the cell, and then it goes into the nucleus and interacts with DNA and impacts 1700 different gene promoters.

And if you look at those, they are things that, for example, decrease in are causing inflammation to go down. And what's happening is apo E4 prevents that.

Ketosis, Nutrition, and Fasting for Brain Health

So it is a pro-inflammatory gene that allowed us to come down out of the trees, walk along the savannah, puncture our feet, fight with our brethren and fight with our food and and eat raw meat, by the way, because meat filled with pathogens, it hasn't been cooked.

You do better if you're able. We four then more recently and we don't know why this occurred. Was it because of fire? The ability to cook things? What?

We don't know what it was, but again ability three and two appear. They are less pro-inflammatory. So yes, if you're living in a third world country, you live longer healthier with ApoE e4.

But if you're not, you actually live longer and healthier with people. Week three and two. Yeah, it's really interesting. And I know in your book you are obviously a huge advocate of good, clean nutrition.

You talk a lot about ketosis, which you know, my, my, my audience is, is aware of. And we know that how important ketosis is. And it actually turns our body's ability to burn fat for fuel and beta hydroxybutyrate, which is kind of the main ketone body that we test when we're looking at your blood.

Ketones has also been associated with turning down inflammation in the brain. Can you talk more about that? That's a great point. So, you know, I did not train as a nutritionist.

There was only one when I was at medical school. There was only one course which I took was it was optional. And we learned virtually nothing about, you know, real nutrition.

And now there's just so much more. And it's really beautiful to see how the neurochemistry fits in with the nutrition. So if you were to sit down and design at your computer the perfect biochemistry for the brain, then the diet part would be a plant.

Rich, you got it. You got to have the phytonutrients. You know, you got to have so many things. Polyphenols alone have been shown to improve cognition.

So just on and on and on, so many things. So it's a plant rich, mildly ketogenic diet. You want to be in that kind of 1 to 4 million molar beta hydroxy butyrate, or if you prefer, looking at, you know, looking at a breathalyzer, and then you want it to be like 10 to 40 in your, in your acetone, your aces, then you want to have high fiber.

Of course, fiber is amazing as we know. And it's, you know, feed your microbiome and and helps you with detox, helps you with better glycemic control, helps you with better lipid control.

It's amazing how important it is. You want to obviously optimize your microbiome, heal your gut. And so and then you want to have appropriate periods of fasting so that you can help to get into ketosis, 12 to 14 hours, if you're able you for -14 to 16 hours if you're able be for positive.

So if you combine all these things you have the right nutrients. Now you have a better gut health. You have all these wonderful, you know, prebiotics, probiotics and post biotics that can be so helpful.

So you could really see how this benefits brain chemistry. Yeah. This is really what we talk about on this show all the time. And you you've actually you've you've, branded your, your keto program.

It's keto flax 12 three I believe. Right. And that's it. And again we just wanted to go for best brain function. People talked and we first said, well, you know, ketosis helps the brain.

They said, great. You know, give me the bacon. Give me the ham, all that stuff. And like, that's not what we're talking about. This is a plant rich, wild and ketogenic diet.

Yeah. You want to have some pastured chicken or some some grass fed beef, you know, have at it. You want to have some wild caught a smashed fish. Great.

Have it, but don't get the high mercury. Not good for your brain, so. Absolutely. It fits beautifully with the sort of diet that you're talking about.

Yeah, yeah, definitely getting high quality protein, grass fed beef. Wild caught fish, healthy fats. I know you're a big fan of extra virgin high polyphenol, extra virgin olive oil, just like I am.

One of the best things you can do for your brain. Avocados. Unless you're ApoE e4 coconut oil, which is really good. AP for us, we tend to go with more focusing more on the monounsaturated fats.

I know that you advocate that as well. Like high polyphenol, extra virgin olive oil and then lots of colors, right? Lots of colorful vegetables, which have those polyphenols and phytonutrients that support your gut microbiome.

And your gut microbiome will actually create butyric acid, which you know is actually a ketone and reduces inflammation in the brain and throughout the body when it consumes those.

And, so, yeah, this is this is what we teach here as well. So it goes hand in hand with what you're doing. And I think that's really got to be the foundation I also like how you break down the fasting based on if you're ApoE e4 or not, and you have a, a tighter, or a more compressed eating window for somebody that's ApoE e4, and that's because they have higher levels of inflammation. Is that correct?

It's partly for the inflammation as you said, but it's also because they are better fat absorbers. It's very interesting. And ApoE4 is something that gives you advantages when you come down out of the trees.

In Africa, 5 to 7 million years ago, you're able to go longer without finding food. You're able to eat a raw meat, you're able to get in, you know, step on something, puncture your foot and get inflamed, and you're now able to quell that inflammation better.

But I should mention there's an important paradox here with Alzheimer's. As I mentioned earlier, this is a network insufficiency. So you do not get enough energy to your brain.

And that can be from blood flow problems, oxygenation, mitochondrial function, ketone levels. So as Professor Stephen Kinane from Canada has shown, you can bridge that gap not completely, but largely just with some exogenous ketones.

So on the one hand, we're trying to get people to be insulin sensitive, which often means doing some periods of fasting. But you have to be very careful because you're taking an insufficiency and temporarily making it more insufficient.

And therefore to get that combination, which is metabolic flexibility, ability to deal with glucose, but also ability to have ketones, which most people lose when they're when they're developing Alzheimer's disease.

So we just typically start with giving some exogenous ketones, ketone salts or esters. And you mentioned coconut oil is fine, but if you're ApoE4 negative or if your LDL particle number is over 1200, you probably want to stay away from, from the coconut oil.

Yeah. And that's really interesting with the genus ketones. I know there's a tweet, I believe it's 2007 pilot study where they went into a nursing home, and all they did was added MCT oil to one group's food.

I'm sure you're familiar with that study. And they showed improvements in their cognitive scoring and just a little bit of MCT oil. No, no changes. And we know that nursing homes, unfortunately, you know, give some of the worst nursing homes and hospitals, probably some of the worst foods people can get.

And these are people that desperately need, the kind of nutrition program like we're talking about here. Exactly. Yeah. And so just something simple, like adding in some exogenous ketones or MCT oil, especially if you have a family member, it's really, a little bit more resistant, can actually you can start to see improvement.

Sometimes when people start to see improvement, they get more on board, to do other things. And so that can be a really, really powerful. Exactly right.

And, you know, I had a guy write to me, about a year and a half ago say, you know, you're telling people, you, you really want to get in this early. Fine.

He said, but but don't tell people to avoid it late because he said, I have my wife who had a Moca score of zero in a nursing home. We put her on the protocol and she's done much better.

And yeah, her Moca score is still low, but, she's interacting. She's dressing herself, she's talking to us. She's more engaged so it can make a difference.

Even in people who are late. Yeah, I know you have so many great case studies, too, of people that are turning this thing around. And it's just really it's it's inspiring.

It's amazing to see. And I was also interested in your book. You talked about Demented Genes, and how they impact the brain. So let's go into those. You know, it's a good point and I did I did put out a book last year called The First Survivors of Alzheimer's.

Seven people wrote their stories. And demented genes are an important part of this. I was surprised when I trained as a neurologist. You know, we talked about, very few toxins that affected the brain.

It was the usual heavy metals. You know what happens with mercury?

Toxins, Oral Health, and Sleep Apnea

What happens with lead, things like that. But what we didn't know was how many of these things are out there. And the fact that we're all exposed when we think about carcinogens.

Of course, Professor Bruce Ames with the Ames test, showed us how to test for carcinogens years and years ago. But nobody ever tells you about the demented genes that you're exposed to, and whether it's exposure to a moldy home that might have staffy blotches in it or Penicillium or Aspergillus or ketone mineral Amia, and maybe making these various mycotoxins, or whether it's because you're exposed to air pollution, it's more and more evidence now on air pollution and its effect, on cognition, or whether it's because you're exposed to various organics.

One of the common ones we see coming up now is appalling that so many people are exposed to, which is basically incomplete combustion. So people who, you know, whose cars may not be working well or who are in a lot of traffic, things like that, again and again and again, that overall exposure to so many toxins, as you know, detoxification is really critical for best health.

And people don't realize this because it's stored it's dealt with for years and years and years. And one of the things that surprised me was people in their early 50s, as you know, they go through these so-called, osteo classic burst for about seven years, typically around the time of menopause, for example, for women or, and reports for men.

But there's the burst that the women have that the men typically don't have. We're now releasing some of these toxins that they have sequestered in the bone over the years, and we see a spike in presentation for Alzheimer's disease.

So toxins, whether inorganic or organic or bio toxins, play an increasingly recognized role in the cognitive decline of Alzheimer's disease. Yeah, for sure.

And you see that all the time with people with mold. One of the common symptoms is that they've been exposed to mold. And they have, mold toxicity. One of the common things is, forgetfulness, brain fog, mood disorders, sleep disorders, things like that, that are all kind of these precursors to developing dementia and Alzheimer's.

Now, I was also very interested. You mentioned how, women get this osteo clastic spike, which means this breakdown in bone tissue as their hormones drop during menopause, because estrogen is so important for kind of maintaining bone mass and so, you know, they store a lot of these toxins, like lead, for example, can be stored in the bone.

And so that can be released. And do you believe that that is the reason. Because women, a much higher percentage of women are developing Alzheimer's than men.

So do you think that's one of the factors? Are there any other factors there? It's a great point. It's well established. And Maria Shriver has pointed this out a number of times, that this that Alzheimer's is unfortunately a woman centric disease.

And so about, almost two thirds of patients, about 65% of patients are women and about 60% of caregivers are women. And so, you know, this is the big question, why is this?

And there seem to be multiple aspects at work here. The drop in progesterone reduces your ability to detox. As Chris Schade has pointed out, the drop in estradiol, this kind of relatively sudden drop with estradiol reduces a synaptic classic support of your neural network and so people of, as you know, have just treated with estradiol alone with a little success.

But again, mono therapies are not the way to go for this. This neural network illness. And then, as you mentioned, this osteo classic burst is rereleasing toxins back in, to the bloodstream.

So for all those reasons and probably additional ones we don't know about as well, women are definitely at increased risk compared to men. Yeah. I had heard also that women, for whatever reason, produce more amyloid.

Is that correct or have you seen anything about that? So that again, that that could be related to the drop in hormones. So what's interesting here is there is this amazing balance, your amyloid precursor protein, your AP is a membrane type one membrane receptor that literally works like a switch.

And it is aggregating inputs. So when things are good it is cleaved at a single site and produces two supportive peptides, one for outside the cell called SAP alpha and one for inside the cell called alpha CTF or C-terminal fragment.

These things support making and keeping synapses when things are bad, and that includes lowering your trophic support like estradiol is one of the examples, and you can literally trace the molecular pathways by which this happens.

Then what happens is the same ATP is cut at three sites, and you get four peptides that support pulling back and protection. So that does give you more amyloid.

So if you give someone support for years with estradiol and then drop it, your brain responds by making more amyloid. Oh yeah. Really interesting. And also the oral microbiome, you had mentioned it before, but that's becoming just increasingly, more well known as a root cause factor for heart disease, for different brain disorders, autoimmune conditions and cancer as well.

So let's, let's discuss that. Such a good point. And as you know, there is a whole area of oral systemic health where many dentists as well as physicians are realizing, wait a minute, these aren't two specialties.

Being a physician and being a dentists are really both part of the same thing, which is looking at how and how oral systemic health works. So whether it's because of, as I mentioned earlier, p gingival or t dental cola or F nucleotide, you just go right down the list.

Your oral microbiome having the good guys rather than the bad guys is absolutely critical. And of course you can add to that things like, you know, Mercury, if you've got amalgams in do you have gingivitis?

And the big surprise has been that the neuropathologist can show us in the brain amyloid plaques surrounding oral, microbiome players. So this stuff, as you mentioned, it's part of your arterial plaque.

It's unfortunately part of inducing cancers, neoplasm formation. And unfortunately, it's also part of dementia. So, yes, oral systemic health is really a growing field and one we all need to understand better.

And of course, the separate issue is then people with with sleep apnea and obstructive sleep apnea because their airways are poor. If they didn't have the appropriate development, when they were young and they are now at increased risk for cognitive decline.

And unfortunately, as you know, the statistics are horrible. About 80% of sleep apnea goes undiagnosed. And untreated, which is just horrible. And it's an unquestionable contributor to cognitive decline.

So yes, oral microbiome is huge. And we recommend that everybody get your oral microbiome checked out. Get you can do it through oral DNA. My period path or there are other ways as well.

But find out where you stand if you've got the bad guys more and fewer good guys. Of course, there are wonderful, oral probiotics now. Yeah, yeah, yeah, a lot of things that you can do to help support your oral microbiome.

Now, I'm a huge advocate of nasal breathing as well. A lot of people are mouth breathers. Have you guys looked at that at all? Obviously, sleep apnea can be associated with chronic mouth breathing.

Have you guys looked at the impact of breathing patterns and mouth breathers, nose breathers and what role that plays in brain health? Yeah, great point.

And of course nasal breathing gives you more of the nitric oxide. So if you're a mouth breather and you have changed your biome you get a double whammy on reducing the nitric oxide.

Increased risk for Cod for coronary events, increased risk for cognitive decline and vascular events in your brain. So double whammy there. Now here's the problem.

Some of us simply cannot breathe very well from our noses, through our noses, because we have allergies or whatever others of us do just fine if you simply close the mouth.

So I think, again, it's so important when you're relatively young, find out where you stand. How is your airway? Are you a good mouth? I mean, a good nose breather, or are you, unfortunately, a mouth breather?

Can you change that or are there other issues that have to be dealt with? These are all again, part of optimizing your cognition and reducing your risk for cognitive decline.

Yeah. And you mentioned a good point there too, when your mouth breathing actually increases your risk of having a poor oral microbiome as well. So you can get mouth nasal breathing.

Not only you're getting that nitric oxide more direct oxygen up into the brain, but also at the same time, you're also doing something to help prevent, poor oral microbiome health.

Key Nutrients and Practitioner Resources

Now let's talk about, let's talk about your five favorite, herbs or nutrients for brain health. Like if somebody was saying, okay, what? Obviously, I know you're in your function.

You do functional medicine. You like to to have more of a targeted approach. But if somebody were to go out and look for herbs or specific nutrients, what are the things that you're seeing that most people are deficient in that really move the needle the most for people?

This is a great point. And yes, you know the thing, it's amazing. Functional medicine has a huge armamentarium. So there are all sorts of things. And you want to kind of this is where being a good doctor helps.

You want to focus. And I always liken this sort of protocol to more like surgery. You're learning a surgical procedure because you got to do things the right way, at the right time, in the right order.

But if you just look at, okay, what across the board are things that are tend to be good for everyone? I like certain things. What I like is whole coffee fruit extract.

It increases Bdnf and it's amazing the biochemistry of Bdnf signaling fits. It's literally intimately intertwined with the biochemistry of Alzheimer's signaling.

It is amazing to me. It changes the cleavage of AP itself. So love whole coffee, fruit extract. Of course you can bump your body enough with exercise as well.

Love things like kazoo bands and, what, the exercise with oxygen therapy. That would be very helpful. Second thing I really like is resolvers. So many of us have some chronic inflammation.

And yes, it's great to have some omega threes, which I like very much as well. DHEA and and EPA, especially, Professor Wortmann from MIT, has spent his career looking at the beautiful benefits of things like choline and and DHEA on synapse formation.

So resolvers really kind of take you a step further and help to resolve ongoing inflammation, just as Professor Charles Sirhan, has discovered in his laboratory.

And then the third thing I like, is to, is to is to increase your colie. Most of us are low in choline. You should get about 550, grams per day of choline.

Most of us don't get that. And so, and so we want to have, you know, so we want to have enough choline. And most of us, again, are a little on the low side.

We get 300 or 400 or something like that. And so, and I should say five 30mg, and the best food sources there of choline are going to be pasture raised.

Eggs are really great. Source. Yeah. Organ meats. Right, are also a very good source. Most people are not consuming organ meats. And a lot of people have egg sensitivities, right.

Especially if they have autoimmune disease. Some people out there that just can't tolerate eggs, but they're part of a great part of a diet. But it can be hard if you're not eating eggs regularly or organ meats to get enough choline.

So supplementation can be really beneficial there. It's a good point. And you can do this with choline. Again. Doctor Workman suggested that years ago.

You can do it with alpha GPC, things like that. So I would say that's kind of number three would be choline related things. Number four would be things that help to heal your gut.

So many people have poor gut status. So things like, you know, things like any sort of bone broth and things like that, I really tend to like in there, you know, other things that, again, you can take as supplementation that are gut healing.

And then, you know, and then other areas, I would say many people are low in magnesium. So, for many people having a magnesium three and eight, which is more for brain penetration and then a magnesium glycine eight, which is more for, you know, gut support, can be very, very helpful.

So I would say those are some of my top five that I could think can be very helpful for so many people. In their quest for better, you know, for better cognition.

And I would maybe add as a, as a bonus, nitric oxide. So things like neo 40 or arginine or beetroot juice, these are all good ways to make sure you mentioned earlier the nose breathing, which is also very helpful, for nitric oxide as well.

Yeah. So good. And magnesium I'm a huge advocate of that. I find that most people, especially anybody that has any sort of neurological type issue, we talked about sleeping, anxiety, depression, brain fog, memory issues. Yes.

Magnesium is probably the one that they feel the most for. From my experience, when they start taking a good quality like a magnesium out three and eight, it's like they feel it. They notice it right away.

And, you know, they come back to that. They say they stay compliant with magnesium because they feel good. Yeah. Now let's just finish up here. I mean, you've got the recode protocol and training.

In fact, you have, programs set up for practitioners all over the world. You also have a lot of great information for laypeople as well. I know Melissa, my health coach, that many of the listeners know, she comes on and does Q&A with me.

She's actually just completed your your program and said it was outstanding. She learned so much. And I just really loved how you guys laid it out and and created it.

So if there's practitioners out there, how can they find out more about this? Yeah, you can go on, Doctor Brett Incom or my colleague Nasscom or Apollo Health co.com.

Any of those. You can also follow on, on Facebook. Doctor Dale Bredesen. So there's, there's a many, many ways. And of course, I published a few books on this.

And you can also take a look at our published papers. So, you know, it's good to be skeptical. Look at our data. And these are also also publicly available.

And so check out the, the published data we have that show people actually getting better. Yeah. Absolutely powerful. And guys, if you're a practitioner or a lay person, definitely get his new book, The End of Alzheimer's Program.

Amazing book, very easy to read if you like my website with a lot of good graphics like we were talking about. He's got some great graphics, graphs, different things like that in this book.

It's really well laid out, very easy to read, and it will be the book if you're if you're out there, if you're interested in brain health, it will be the book of the year for you and you'll want to refer it.

You'll probably buy several so you can give it out to to friends and family, coming up this holiday. So, Doctor Bateson, thanks again so much for your time.

Any last words of inspiration here for our audience? Yeah, just the main thing is that we've been told that the cognitive decline is hopeless. Please ignore that.

There's a tremendous amount of hope we really can. All of us working together, reduce the global burden of dementia. So while I appreciate everything that you're doing, all the great work that you're putting out and the program that you set up in the books.

So, guys, again, go out and support Doctor Bredesen, get his book and pass it on to others, and we'll see you guys in a future video. Be blessed.