Brain Defenders: How to Protect Your Brain as You Age With Dr. David Perlmutter Transcript

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Introduction

Hello, this is Marie. Are Hello, this is Marie. Are you ready to learn you ready to learn what you can do what you can do now to prevent now to prevent Alzheimer's Alzheimer's Alzheimer's and other and other brain diseases, brain diseases, and how to maintain and how to maintain brain health as you brain health as you age? If so, then you are age? If so, then you are in the right place.

in the right place. Our Our Our special guest today is Dr. David Dr. David Perlmutter, a board Perlmutter, a board -certified -certified -certified neurologist, leading brain health expert, and brain health expert, and best-selling author. His best-selling author. His new book, Brain Defenders, Brain Defenders, offers a powerful offers a powerful shift in our shift in our understanding of what understanding of what actually drives actually drives brain changes. In this brain changes. In this conversation, we'll conversation, we'll discuss what may be discuss what may be happening long happening long before symptoms appear, before symptoms appear, why a proactive why a proactive approach is so approach is so important, and important, and simple and meaningful simple and meaningful steps you can steps you can start taking start taking today to today to support your support your brain. This is an episode that is brain. This is an episode that is truly not to be truly not to be missed. It can missed. It can change your life.

change your life. So stay with So stay with us. Welcome, Dr. Perlmutter., Dr. Perlmutter. I'm so happy to see I'm so happy to see you on the podcast. Before you on the podcast. Before we dive into the we dive into the topic, I want to say that topic, I want to say that I really I really enjoyed your enjoyed your new book, " Brain Defenders," which is Brain Defenders," which is coming out today coming out today, and it's so, and it's so exciting. But what exciting. But what really struck me was how really struck me was how you you you take something that take something that so many so many people fear—memory loss, the development of dementia—and, the development of dementia—and turn it turn it into something inspiring. And into something inspiring. And for me, you know, I for me, you know, I truly believe in that. We truly believe in that. We take fear and take fear and turn it into turn it into empowerment. You empowerment. You have shown that we have shown that we can do a can do a lot to protect lot to protect our brains, our brains, regardless of age. I regardless of age. I can't wait to can't wait to share all of share all of this with everyone who's this with everyone who's listening, because I listening, because I really…

really… really… Well, Margie, you Well, Margie, you hit the nail on the head right away hit the nail on the head right away, and I want to, and I want to comment on this: we comment on this: we live in a society live in a society that is disempowering us to some extent that is disempowering us to some extent. We live by. We live by the idea of ??"live your life the way you the idea of ??"live your life the way you want," and when you want," and when you have a problem, whether have a problem, whether it's cognitive it's cognitive impairment, impairment, impairment, osteopenia, or osteopenia, or osteoporosis—it osteoporosis—it doesn't matter what it is— modern medicine is here to modern medicine is here to fix it. And I fix it. And I think the most think the most fundamentally fundamentally fundamentally important lesson important lesson or message of this book is the sense of power and is the sense of power and understanding that understanding that each of us is the each of us is the architect of architect of our own brain's destiny. And the idea that our own brain's destiny. And the idea that you can you can just hope just hope for the best, and when everything for the best, and when everything starts to fall apart, starts to fall apart, there will be a cure…it there will be a cure…it doesn't work. Perhaps doesn't work. Perhaps one day a cure will appear one day a cure will appear, and we will definitely, and we will definitely talk about it, talk about it, but for now we must but for now we must increase our own increase our own efforts. And that's what efforts. And that's what this book is about—giving this book is about—giving you the tools to you the tools to protect your brain.

And I want to emphasize that And I want to emphasize that these changes these changes should begin at the should begin at the age of 30-40, because that's when metabolic changes occur in the body, metabolic changes occur in the body, which, as if the brain were not which, as if the brain were not part of the body, part of the body,

actually determine actually determine its fate.

Yes. You know, Yes. You know, nobody in their 30s or 40s nobody in their 30s or 40s thinks, "Are thinks, "Are my habits affecting my habits affecting my brain?" But my brain?" But we'll talk about that we'll talk about that later. And I think that's later. And I think that's really important really important to consider, because to consider, because throughout our lives we throughout our lives we can do so can do so much, just like much, just like with our bones; There are with our bones; There are many possibilities. And many possibilities. And the great thing is that the great thing is that the audience you're the audience you're addressing is addressing is made up of people made up of people who are into who are into sports, they're sports, they're proactive, they proactive, they want to know what they want to know what they can do. So can do. So you're really you're really reaching out to the reaching out to the right people who right people who will will will use this and use this and implement change.

The new science of brain health and immunometabolism

But where did I But where did I start, when there's start, when there's something important in your book : there's a : there's a significant shift in how significant shift in how we think about we think about brain health, we've brain health, we've gone beyond the gone beyond the traditional focus, traditional focus, and you can and you can explain it, on explain it, on amyloid plaques, amyloid plaques, to what you called to what you called immunometabolism.

immunometabolism. Can you just Can you just explain what that explain what that means and what it is? means and what it is? This is a huge This is a huge dichotomy that has been dichotomy that has been long awaited and is long awaited and is very welcome. Since the late very welcome. Since the late 1980s, we've been told 1980s, we've been told that there's that there's this this this sticky protein, a sticky protein, a misfolded protein misfolded protein called beta- amyloid, that builds up in the brain, and that this is the amyloid, that builds up in the brain, and that this is the main cause of main cause of Alzheimer's disease.

Alzheimer's disease. You know what? This is, of course, You know what? This is, of course, not a medical term, not a medical term, but I'll but I'll use it anyway—it's use it anyway—it's nonsense. This is not nonsense. This is not true true. Alzheimer's disease is. Alzheimer's disease is not caused by beta- amyloid. We've all been been conditioned to believe this conditioned to believe this myth, including me as a neurologist, and so all the drugs myth, including me as a neurologist, and so all the drugs have been designed to have been designed to target target target this beta-amyloid: this beta-amyloid: get rid of the beta- amyloid—problem amyloid—problem amyloid—problem solved. You know what?

solved. You know what? It didn't work. You know, earlier You know, earlier this year, a few this year, a few months ago, there was a months ago, there was a Cochrane review, Cochrane review, and a Cochrane and a Cochrane review is the review is the most sophisticated most sophisticated most sophisticated global approach to global approach to understanding medical understanding medical research in a particular research in a particular field, and they field, and they evaluated 17 studies evaluated 17 studies that looked at that looked at the effectiveness of the effectiveness of amyloid-based drugs. In other amyloid-based drugs. In other words, drugs that are words, drugs that are still marketed for still marketed for the treatment of the treatment of Alzheimer's disease Alzheimer's disease target this beta- amyloid. And you know, this is a amyloid. And you know, this is a scenario where scenario where someone is someone is someone is experiencing experiencing experiencing cognitive decline.

cognitive decline. They go to the doctor. They go to the doctor. She diagnoses them with She diagnoses them with Alzheimer's disease. Alzheimer's disease.

And now you're in an And now you're in an infusion center, infusion center, where every few where every few weeks, for a lot of weeks, for a lot of money, they give you this money, they give you this intravenous intravenous intravenous drug that supposedly drug that supposedly helps with helps with Alzheimer's disease Alzheimer's disease because it affects because it affects beta-amyloid. A beta-amyloid. A Cochrane Cochrane Cochrane Community analysis, which included Community analysis, which included 17 large 17 large studies involving studies involving 20,342 people, 20,342 people, showed that showed that the effectiveness of these the effectiveness of these drugs, they drugs, they said, is meager. In other words, these other words, these

medications have no medications have no significant effect on significant effect on slowing slowing slowing cognitive cognitive cognitive decline, but decline, but at the same time are associated with at the same time are associated with quite significant quite significant risks. About 20–28% of people taking 20–28% of people taking these drugs these drugs experience experience experience microbleeds in microbleeds in the brain and/or the brain and/or swelling, known swelling, known as ARIA—amyloid- associated associated associated imaging abnormalities. In imaging abnormalities. In medicine, we always medicine, we always strive to assess the so- strive to assess the so- called called called risk-benefit ratio. In risk-benefit ratio. In this case, the medication this case, the medication carries high risk carries high risk and virtually zero and virtually zero benefit. So the benefit. So the risk-to-benefit ratio is risk-to-benefit ratio is very high, which very high, which means we should means we should stay away from them stay away from them. I emphasize. I emphasize this because it this because it reinforces our reinforces our understanding that understanding that Alzheimer's disease is Alzheimer's disease is not caused by beta- amyloid. These amyloid. These drugs are incredibly drugs are incredibly effective at removing effective at removing beta-amyloid from the brain. And you know what? This does. And you know what? This does no one no one any good. This any good. This quite clearly indicates that quite clearly indicates that we need to we need to look look look elsewhere for answers. And, elsewhere for answers. And, fortunately, understanding fortunately, understanding is changing, and it is is changing, and it is changing from changing from many perspectives.

many perspectives. We'll figure it out now. The change in understanding. The change in understanding concerns what concerns what you described as you described as immunometabolism, immunometabolism, immunometabolism, that is, the relationship between the that is, the relationship between the immune system and immune system and metabolism.

metabolism. metabolism. We can We can significantly influence the latter. What does immunometabolism mean? immunometabolism mean? First, the immune First, the immune part. We now part. We now understand that immune understand that immune cells in the brain cells in the brain play a key play a key role in the development of role in the development of Alzheimer's disease, Alzheimer's disease, Parkinson's disease, Parkinson's disease, multiple sclerosis, multiple sclerosis, frontotemporal dementia, frontotemporal dementia, multiple system multiple system atrophy, atrophy, atrophy, progressive progressive progressive supranuclear supranuclear supranuclear palsy, and all of these palsy, and all of these complex names for complex names for neurodegenerative neurodegenerative conditions like conditions like Alzheimer's disease. They are all Alzheimer's disease. They are all united. They are not united. They are not different. They are all different. They are all united because in united because in each of these each of these seemingly different seemingly different diseases, the diseases, the brain's immune system, namely brain's immune system, namely microglial microglial microglial cells, plays a cells, plays a central and central and direct role.

So these So these microglial microglial microglial cells — this may cells — this may sound like a long sound like a long explanation, but I explanation, but I hope I'm hope I'm laying it all out there laying it all out there. Let me. Let me summarize. Here are the summarize. Here are the main points. The main points. The brain's immune system brain's immune system plays a central plays a central role in role in brain degeneration. Or, on the other brain degeneration. Or, on the other hand, it supports hand, it supports brain health. This is the brain health. This is the first point. Point first point. Point two: The key two: The key players in the players in the brain's immune system brain's immune system are called are called are called microglial microglial microglial cells. Point cells. Point three: this is very three: this is very important. These important. These microglial microglial microglial cells can be cells can be both our friends and both our friends and our enemies. They can be in the. They can be in the M2 configuration, which M2 configuration, which means support, means support, care, nurturing, care, nurturing, allowing us allowing us to grow new to grow new brain cells, nourish brain cells, nourish our synapses, our synapses, supporting the functioning of the supporting the functioning of the blood-brain blood-brain blood-brain barrier. Or they barrier. Or they can transition to the can transition to the M1 state, the evil M1 state, the evil twin. In other twin. In other words, M2 is supportive, M1 is destructive. These are destructive. These are microglial microglial microglial cells of the brain, the cells of the brain, the brain's immune system. The inspiring part of inspiring part of our our our story today is that story today is that whether they are whether they are brain protectors or brain protectors or brain destroyers brain destroyers depends on their depends on their metabolism, and their metabolism, and their metabolism metabolism metabolism reflects the reflects the reflects the body's metabolism. This is body's metabolism. This is all our time together all our time together today, and we're today, and we're going to figure it going to figure it all out. In other all out. In other words, all words, all neurodegenerative

neurodegenerative neurodegenerative conditions are based on conditions are based on changes in changes in changes in brain microglial cells from M2 (supportive) to M1 supportive) to M1 (destructive). This change is a (destructive). This change is a result of their result of their metabolic shift, metabolic shift, which changes their which changes their metabolism to mirror that of metabolism to mirror that of our our body. This is a real body. This is a real success. This gives us success. This gives us a lot of topics to a lot of topics to talk about. That's right. There talk about. That's right. There are so many nuances are so many nuances to discuss here, to discuss here, such as how our such as how our lifestyle affects lifestyle affects metabolism and therefore metabolism and therefore microglial microglial microglial cells. But what I've cells. But what I've just done is I've just done is I've shifted the shifted the responsibility, the responsibility, the control of control of brain health, from the doctor brain health, from the doctor who diagnoses who diagnoses and prescribes medication, to the and prescribes medication, to the person themselves, giving that person themselves, giving that right back to the person themselves. In other words, we are the architects, each of architects, each of us, of the fate of our brain, us, of the fate of our brain, and it depends on and it depends on our lifestyle, our lifestyle, which we could which we could change if we knew change if we knew how. And that's what my how. And that's what my new book is about: giving new book is about: giving people the tools to determine the fate of their own determine the fate of their own brains. In 2024, a study brains. In 2024, a study was published in The Lancet was published in The Lancet that that showed that if people showed that if people could pay could pay attention to 14 different attention to 14 different factors, such as factors, such as controlling controlling controlling blood pressure, blood pressure, reducing the risk of reducing the risk of head head head injuries (for example, injuries (for example, wearing a helmet when cycling), controlling cycling), controlling weight, quitting weight, quitting smoking, and smoking, and exercising, the overall exercising, the overall risk of dementia could be risk of dementia could be reduced by 50%.

Think about it. This is a Think about it. This is a powerful number when powerful number when you compare it to the fact that there are you compare it to the fact that there are 7 million Alzheimer's patients in America today. It. It shouldn't be like that. You know, shouldn't be like that. You know, Robert Kennedy Sr. once said Sr. once said that some people that some people ask why things are the way they are ask why things are the way they are and say "why," and say "why," while others talk about while others talk about how things could be and how things could be and ask "why ask "why not?" That's what we're talking about today. Why not?

talking about today. Why not? Why not give people Why not give people these tools and these tools and make a significant make a significant contribution not only to contribution not only to reducing the global reducing the global risk of risk of Alzheimer's disease, but also to the Alzheimer's disease, but also to the health of every health of every person?

person? person?

Metabolic health and its impact on cognitive decline

Yes, this is extremely Yes, this is extremely important, because there is important, because there is so much so much hope ahead, so much that hope ahead, so much that we can we can do, and that do, and that most people most people don't even don't even realize. But the realize. But the most interesting thing about your most interesting thing about your book is that you book is that you emphasize the emphasize the importance of importance of importance of metabolic metabolic metabolic health, yet you health, yet you cite statistics cite statistics that only 6-7% of Americans have Americans have it. So what does this mean? You know, if we follow the? You know, if we follow the same path, are same path, are most most most people headed for people headed for cognitive cognitive cognitive decline? In fact, decline? In fact, the statistics we the statistics we cite in the book cite in the book reach over 90%. This reach over 90%. This means that only 10% of American adults American adults are considered medically are considered medically metabolically metabolically metabolically healthy. That is, only healthy. That is, only 10% do not have 10% do not have metabolic problems, such as hypertension,, such as hypertension, elevated elevated elevated blood sugar levels, blood sugar levels, overweight, overweight, overweight, obesity, obesity, obesity, dyslipidemia, or dyslipidemia, or high high high triglyceride levels. This is a triglyceride levels. This is a sad statistic sad statistic because everything I because everything I just listed just listed is mostly a is mostly a consequence of consequence of lifestyle. Our food, lifestyle. Our food, physical physical physical activity levels, and activity levels, and of course, sleep of course, sleep play a huge play a huge role in how role in how our our our blood sugar levels are regulated.

For example, For example, insulin function, insulin function, insulin sensitivity, our insulin sensitivity, our diet, of course, diet, of course, controls body weight and to controls body weight and to some extent some extent determines whether or not our determines whether or not our blood lipid levels will be blood lipid levels will be normal, as is the normal, as is the case with case with triglycerides.

triglycerides. Of course, there are Of course, there are genetic factors genetic factors associated with associated with elevated elevated elevated blood lipid levels, blood lipid levels, hypercholesterolemia hypercholesterolemia, we understand that, but, we understand that, but the point is that these the point is that these things can be corrected.

things can be corrected. Metabolic problems Metabolic problems can usually be can usually be addressed with addressed with lifestyle changes, but to be lifestyle changes, but to be fair fair fair, medication, medication can also be can also be appropriate, and no one is appropriate, and no one is arguing that.

arguing that. But this is the path to But this is the path to brain decline. What did I brain decline. What did I just say? These just say? These metabolic problems metabolic problems pave the way for pave the way for brain decline. If brain decline. If you have you have type 2 diabetes, you have a type 2 diabetes, you have a condition that increases your condition that increases your risk of developing risk of developing dementia threefold. Your risk of dementia risk of dementia increases by 300% as a increases by 300% as a result of your result of your type 2 diabetes.

Yes, there are certain, albeit Yes, there are certain, albeit minor, genetic minor, genetic factors associated with type 2 diabetes, but frankly type 2 diabetes, but frankly, it is a lifestyle issue. This is due, lifestyle issue. This is due, for example, to the for example, to the consumption of large consumption of large amounts of amounts of amounts of ultra-processed ultra-processed ultra-processed foods. So, who foods. So, who eats these eats these ultra-processed ultra-processed ultra-processed foods? Americans.

60% of the average American's daily calorie intake American's daily calorie intake comes from these comes from these ultra-processed ultra-processed ultra-processed foods. Why is this a foods. Why is this a problem and how does it problem and how does it relate to our relate to our conversation today? Well, it does conversation today? Well, it does matter if we matter if we look at a look at a study study study published in the published in the journal journal Alzheimer's Prevention. Journal Alzheimer's Prevention. Journal of of of Alzheimer's Disease Prevention.

Alzheimer's Disease Prevention. Can you imagine? This is amazing? This is amazing to me. But there is a to me. But there is a journal on journal on Alzheimer's disease prevention.

Alzheimer's disease prevention. In my time, no one would have In my time, no one would have even even even thought about thought about preventing preventing preventing Alzheimer's disease. This is Alzheimer's disease. This is our our our topic today. And there is a magazine that topic today. And there is a magazine that came out in January 2025 came out in January 2025. And this was a. And this was a study of 1,730 people, study of 1,730 people, no, 1,375 people, who no, 1,375 people, who were followed for about were followed for about 12 years, studying 12 years, studying their their their consumption levels of these consumption levels of these ultra-processed ultra-processed ultra-processed foods.

foods. It turns out that for It turns out that for every serving of every serving of ultra-processed ultra-processed ultra-processed foods per day— a handful of chips, a handful of chips, flavored flavored flavored yogurt, or something else—the risk of developing risk of developing Alzheimer's disease Alzheimer's disease increased by about increased by about 13%. For each serving; 13%. For each serving; people who consumed 10 people who consumed 10 or more servings per or more servings per day, which is extremely day, which is extremely common, had an common, had an increased risk of increased risk of about 2.7 times. In other words, that's an other words, that's an increase in risk of increase in risk of about 270% for a about 270% for a disease that has no disease that has no pharmaceutical pharmaceutical pharmaceutical treatment, just because of the treatment, just because of the foods they foods they chose to chose to consume. So I consume. So I think this is think this is incredibly valuable incredibly valuable information. You know, when I read my, when I read my brain journals, my brain journals, my neurological journals, there are pages upon, there are pages upon pages of pages of pages of

advertisements advertisements advertisements trying to trying to convince convince convince neurologists like me neurologists like me to use these to use these drugs that drugs that target beta- amyloid. You know, amyloid. You know, the word " myopia" comes to mind as a sign of myopia" comes to mind as a sign of very limited, very limited, narrow thinking. This is narrow thinking. This is not what we should not what we should do. John F. Kennedy do. John F. Kennedy once said that the roof once said that the roof should be fixed should be fixed while the sun shines. And while the sun shines. And you know, I think we're you know, I think we're talking about what to talking about what to do about do about Alzheimer's disease, and Alzheimer's disease, and maybe even maybe even looking at looking at preventing it? And we're preventing it? And we're talking about people in their talking about people in their 60s and 70s, when 60s and 70s, when they start to they start to experience cognitive experience cognitive impairment.

impairment. impairment. Wrong Wrong Wrong answer. I answer. I think in my book, think in my book, literally in my literally in my book, the idea is to target 30- to 40- year-olds, because that's not year-olds, because that's not the time when the time when cognitive cognitive cognitive decline is noticeable, but that's when decline is noticeable, but that's when metabolic problems start. That's when. That's when elevated elevated elevated blood sugar, elevated fasting blood sugar, elevated fasting insulin, insulin, insulin, glycosylated glycosylated glycosylated hemoglobin, uric hemoglobin, uric acid—all of these things acid—all of these things start happening start happening start happening around that time, and that's when the brain health program should start. Just like a heart-healthy diet and a heart-healthy diet and a program to program to maintain maintain maintain bone density. You know, it bone density. You know, it 's not enough to wait for 's not enough to wait for someone to suddenly someone to suddenly do a do a bone density test and bone density test and find out they have full-blown find out they have full-blown osteoporosis. This is already a osteoporosis. This is already a difficult task.

Therefore, these ideas for Therefore, these ideas for women about strength women about strength training in their 30s training in their 30s play a huge play a huge role in reducing the role in reducing the risk of developing risk of developing bone loss bone loss. And you know what?

. And you know what? Exercise in your 30s and 40s Exercise in your 30s and 40s and careful and careful attention to attention to nutrition have a significant nutrition have a significant impact on the impact on the future of your future of your brain, heart, brain, heart, cancer risk, and the cancer risk, and the functioning of functioning of functioning of every major every major organ in your body.

organ in your body. So, we have to So, we have to bring the brain into bring the brain into this discussion, and that is this discussion, and that is our task. This is our task. This is true, because the body true, because the body does not exist in isolation, does not exist in isolation, although in medicine, although in medicine, unfortunately, unfortunately, unfortunately, everything is often separated: the brain everything is often separated: the brain separately, the bones separately. When you. When you follow all follow all these great habits, these great habits, everything improves, which is everything improves, which is just fantastic.

Blood sugar, insulin resistance, and brain health

just fantastic. But you said something But you said something very interesting: you very interesting: you talked about talked about blood sugar levels and their blood sugar levels and their relationship. And I relationship. And I constantly observe constantly observe in conventional in conventional medicine that even medicine that even when people when people are in a are in a pre-diabetic pre-diabetic pre-diabetic state, nothing is state, nothing is done; It's not even done; It's not even discussed. And discussed. And then, suddenly, okay, then, suddenly, okay, diabetes, let's diabetes, let's take medicine, take medicine, let's do something let's do something else. But this is at an early else. But this is at an early stage. This is an early stage. This is an early stage. There is stage. There is so much you can do. And so, like so much you can do. And so, like with many other with many other things, until it things, until it becomes a real becomes a real problem that can be problem that can be treated, people just treated, people just ignore it. And so, well ignore it. And so, well, it's true.

, it's true. You know, about a You know, about a third of third of American adults have American adults have prediabetes. And the worst prediabetes. And the worst statistic related statistic related to this is to this is that about 90% of them don't that about 90% of them don't know about it.

know about it. Yes. Therefore, I believe that Yes. Therefore, I believe that therapists and other therapists and other healthcare professionals healthcare professionals need to be need to be much more assertive much more assertive on this issue. Yes.

on this issue. Yes. I think the idea of I think the idea of testing your fasting blood sugar once a year fasting blood sugar once a year and thinking everything is and thinking everything is fine is wrong. I fine is wrong. I categorically categorically categorically state that this is state that this is wrong. And I wrong. And I tell you why in the book tell you why in the book. Because your. Because your blood sugar levels blood sugar levels may be within may be within normal limits. We can normal limits. We can talk about this talk about this wording in a moment.

wording in a moment. may be within may be within normal limits because your normal limits because your insulin and insulin and pancreas pancreas pancreas are working are working are working overtime to overtime to keep it at keep it at that level. How that level. How can you know this?

can you know this? Well, one way Well, one way to find out is to check your to check your insulin levels. If your insulin levels. If your blood sugar is blood sugar is normal but your normal but your insulin levels are insulin levels are high, it means high, it means your your your pancreas is producing this pancreas is producing this insulin, working insulin, working overtime to overtime to keep your keep your sugar levels where they should sugar levels where they should be. And this can't be. And this can't last forever. This last forever. This cannot last even cannot last even for a few for a few years because very years because very quickly your cells quickly your cells will become resistant to will become resistant to this increased this increased insulin level. You insulin level. You will develop what is will develop what is aptly called aptly called insulin resistance insulin resistance, and of course, once, and of course, once that starts, your that starts, your blood sugar levels will rise.

blood sugar levels will rise. So, fasting insulin levels So, fasting insulin levels and and and keeping them between, keeping them between, say, two and say, two and five five five microunits per microunits per milliliter is something to look at in addition to fasting in addition to fasting blood glucose levels blood glucose levels. OK.

. OK. If you If you only get tested once a only get tested once a year, year, year, please include a fasting please include a fasting insulin level insulin level and a and a glycated glycated glycated hemoglobin test with your doctor. I would like to hemoglobin test with your doctor. I would like to know what my know what my average is.

average is. I also want to know if I also want to know if I'm on the path to I'm on the path to prediabetes, which is a prediabetes, which is a precursor to precursor to precursor to developing diabetes.

developing diabetes. So, this is again a So, this is again a very predictive very predictive indicator. And this is what indicator. And this is what we should we should pay attention to in our 30s and 40s pay attention to in our 30s and 40s. You know, in an. You know, in an ideal world, we would ideal world, we would do what's called do what's called continuous continuous continuous glucose monitoring in glucose monitoring in these individuals as soon as these individuals as soon as their fasting their fasting insulin levels rise insulin levels rise. Uh, and what does that. Uh, and what does that mean? This means mean? This means that you, you know, carry that you, you know, carry one of these one of these devices on your shoulder.

devices on your shoulder. I'm not wearing it now, I'm not wearing it now, but I was wearing it a week ago. I don't do this I don't do this all the time, but I check I check my my my blood sugar levels every few months blood sugar levels every few months to make sure to make sure I'm making the right I'm making the right dietary choices dietary choices to keep my sugar levels in to keep my sugar levels in check, which is check, which is good for my good for my metabolism and my brain.

I can't I can't afford not to afford not to do this. My father do this. My father died of died of Alzheimer's disease, so Alzheimer's disease, so I need to I need to step up my step up my interventions, change my interventions, change my lifestyle.

lifestyle. Hi, this is Margie. As Hi, this is Margie. As a physical therapist, I know firsthand how know firsthand how important exercise is for important exercise is for our bones, our bones, overall health, overall health, and

happiness. Unfortunately, and happiness. Unfortunately, there is a lot of there is a lot of confusion about confusion about what exercises are what exercises are safe and safe and effective for effective for people with osteoporosis.

That's why I created That's why I created this guide, which this guide, which includes a 30-minute includes a 30-minute video where I explain video where I explain the concepts so you the concepts so you understand what to understand what to do and what to do and what to avoid during your avoid during your workouts. This is important because this way you can because this way you can come to any come to any class knowing what class knowing what you should do and you should do and what to avoid, because what to avoid, because too many people too many people do exercises that do exercises that actually increase the actually increase the risk of risk of spinal fractures. I've also spinal fractures. I've also included a video included a video demonstrating effective demonstrating effective balance, balance, balance, posture, and resistance exercises posture, and resistance exercises that you that you can incorporate into can incorporate into your routine your routine today. So, today. So, all you have to all you have to do to get do to get this free this free guide is go guide is go to tinyurl.com/steoporosis exercises.

to tinyurl.com/steoporosis exercises. So this is t i nyurl.com exercises again or you can exercises again or you can click the link click the link in the description to the release.

in the description to the release. Back to the show. You know, it's so interesting You know, it's so interesting because I do it too. You because I do it too. You know, all of a sudden my know, all of a sudden my blood sugar blood sugar was like on the verge of was like on the verge of prediabetes, at prediabetes, at its lowest its lowest level, and I thought, oh level, and I thought, oh my God, what am I doing? And I my God, what am I doing? And I saw that, you know, saw that, you know, every person is different.

every person is different. What? What product is What? What product is their "kryptonite" their "kryptonite" that makes their sugar levels that makes their sugar levels rise? Or for rise? Or for me it was just me it was just eating too much eating too much fruit, but who would have fruit, but who would have thought? It was thought? It was incredibly helpful and incredibly helpful and I was able to achieve I was able to achieve such significant changes such significant changes because of it. But in because of it. But in this community of people this community of people who care about who care about bone health, bone health, they found that anyone with prediabetes, anyone with prediabetes, you know, with an A1C you know, with an A1C above 5.7, has a 24% increased risk of fracture. So this is a 24% increased risk of fracture. So this is a huge problem; huge problem; it has such a it has such a huge impact on huge impact on bone health as it does bone health as it does on everything else. And, as you on everything else. And, as you said, most said, most people don't even people don't even realize it realize it because they go to because they go to the doctor and they don't tell them anything until they're at diabetic levels.

tell them anything until they're at diabetic levels. Therefore. Therefore. Yes, and I think Yes, and I think the term "prediabetes" the term "prediabetes" only hurts people only hurts people because it means, "well, because it means, "well, I don't have diabetes, I don't have diabetes, right?" I am not diabetic.

right?" I am not diabetic. I have prediabetes, but I have prediabetes, but they should they should say "I don't have say "I don't have diabetes" with a big diabetes" with a big sign behind my back: sign behind my back: "for now." And, you know, "for now." And, you know, prediabetes is prediabetes is serious. Osteopenia is serious. You are already is serious. You are already on this path. You are on your on this path. You are on your way to real way to real problems. This is an analog problems. This is an analog scale. There are scale. There are very few things in medicine that are very few things in medicine that are binary.

binary. binary.

Pregnancy: You are either

Pregnancy: You are either pregnant or you are not. You are pregnant or you are not. You are either dead or alive. But, you know, in the case But, you know, in the case of metabolism—it's a of metabolism—it's a spectrum, a scale that spectrum, a scale that we have to pay we have to pay attention to. This whole thought: " well, my well, my blood sugar is within normal limits." blood sugar is within normal limits." This is not enough.

This is not enough. Everyone I talk to wants to optimize wants to optimize their health. You their health. You want to have want to have optimal performance. You want to have the. You want to have the best health. You best health. You want to do everything you want to do everything you can to be can to be resilient to resilient to brain function decline or bone density loss. So you really bone density loss. So you really want the best; want the best; You know, the "normal You know, the "normal range" is the range" is the average average average when you take a thousand when you take a thousand people, subtract people, subtract two standard two standard deviations, and say, deviations, and say, "This is the norm, and we're going "This is the norm, and we're going to publish it." This is not something that to publish it." This is not something that is ideal.

is ideal. So the idea that a So the idea that a blood sugar level of 103 is " well, you're just a little out of the well, you're just a little out of the norm norm." "So there's nothing to." "So there's nothing to worry about." No, this is worry about." No, this is not the level not the level you need. You you need. You need a need a fasting blood sugar level fasting blood sugar level around 90 or even around 90 or even in the 80s with something. And in the 80s with something. And how do you know that?

how do you know that? You need to You need to get checked more often. And you can. And you can predict this predict this based on your based on your fasting insulin levels.

fasting insulin levels. And be sure, as you And be sure, as you just mentioned, just mentioned, to check your to check your glycated glycated glycated hemoglobin (A1C) level, hemoglobin (A1C) level, because the risk of brain function impairment does not begin brain function impairment does not begin at 7, but at at 7, but at 5.6–5.8. That's when 5.6–5.8. That's when the changes that the changes that set the stage for a set the stage for a diagnosis of diagnosis of Alzheimer's disease begin. By the way, Alzheimer's disease begin. By the way, this is a proven fact this is a proven fact published in the New England Journal of Medicine. So New England Journal of Medicine. So you know, that approval you know, that approval from the doctor when he from the doctor when he says, "Well, you're not in the says, "Well, you're not in the diabetic zone," all of your viewers all of your viewers today, on the day today, on the day this new book comes out this new book comes out, should, should understand that we understand that we can do better.

can do better. This is very important. And I This is very important. And I keep seeing the same thing keep seeing the same thing : everyone takes a fasting glucose test. But it fasting glucose test. But it depends on depends on what day it is, what day it is, what you ate last what you ate last night, and night, and many other things.

many other things. Many people get an Many people get an A1C test, but A1C test, but most doctors don't most doctors don't order a order a fasting insulin test. I fasting insulin test. I often saw cases often saw cases where A1C and where A1C and fasting glucose were, as they say, fasting glucose were, as they say, within the “normal range,” within the “normal range,” but it was the fasting insulin that but it was the fasting insulin that was very was very telling and important.

So, as you said, this is the So, as you said, this is the analysis that we analysis that we all should all should definitely do, definitely do, because because because Yes. And you know, if you Yes. And you know, if you see those see those TV commercials for TV commercials for diabetes drugs, with diabetes drugs, with all due respect, they all due respect, they often show often show people who are very people who are very overweight and are overweight and are happy because they've lowered their A1C happy because they've lowered their A1C below 7. Oh my God. If below 7. Oh my God. If your A1C is 6.5, your A1C is 6.5, you have a problem. You have you have a problem. You have problems in terms of problems in terms of brain health. Therefore, brain health. Therefore, lowering A1C below lowering A1C below seven with seven with any any any advertised medication is pointless. It doesn't is pointless. It doesn't make you healthy.

make you healthy. We must act We must act much more decisively. This much more decisively. This weight needs weight needs to be lost. If a person to be lost. If a person needs more aggressive needs more aggressive medication, so be it.

medication, so be it. But I think we all But I think we all understand that understand that lifestyle changes can lifestyle changes can lead to lead to significant weight loss.

significant weight loss. And when this And when this happens, happens, happens, blood sugar levels blood sugar levels drop. The drop. The ketogenic diet ketogenic diet helps significantly helps significantly lower blood sugar levels lower blood sugar levels and can be and can be used used used in conjunction with medication under a in conjunction with medication under a doctor's supervision, doctor's supervision, often allowing often allowing even patients with even patients with type 2 diabetes type 2 diabetes to go off to go off medication. These are the medication. These are the results of a results of a results of a study study study published by published by published by Dr. Sarah Dr. Sarah Halberg. So you know, Halberg. So you know, the messages on the messages on the evening news or in the evening news or in advertising are not going to be, advertising are not going to be, "Hey, change your "Hey, change your diet, change your diet, change your lifestyle, and your lifestyle, and your blood sugar will normalize." How are they going to." How are they going to sell such advertising?

sell such advertising? This isn't patent This isn't patent property, right? property, right? But, you know, we're But, you know, we're convinced, "Oh, I'm convinced, "Oh, I'm taking this medicine, I'm taking this medicine, I'm taking that medicine, and taking that medicine, and now I'm doing everything now I'm doing everything right." And then, right." And then, you know, at the end of you know, at the end of the commercial, this person is already the commercial, this person is already playing with his grandchildren, and playing with his grandchildren, and everything is just wonderful. We everything is just wonderful. We need to do a better need to do a better job with our job with our messaging.

messaging. messaging. This is so true. This is not This is so true. This is not just a pill for just a pill for all ills. This, all ills. This, you know, is much you know, is much deeper than it seems.

deeper than it seems. And when you address And when you address all these root causes all these root causes and make lifestyle changes and make lifestyle changes, everything gets, everything gets better. Every better. Every part of your part of your life. And that's what I life. And that's what I think, as you said, is think, as you said, is so inspiring about this so inspiring about this method and this way of method and this way of looking at things.

Because you Because you are in control of the situation yourself are in control of the situation yourself with the knowledge and with the knowledge and tools that you tools that you give in the book, people give in the book, people can really can really make a difference in an make a difference in an area where, I area where, I tell you, most tell you, most people say, "Oh, that's people say, "Oh, that's ridiculous." This is what the ridiculous." This is what the average average average person, even person, even an educated one, will say: when you an educated one, will say: when you say, "You know, there are say, "You know, there are things you can things you can do to avoid ending up like your mother or grandmother," many will look at you with will look at you with disbelief. But you disbelief. But you want to share want to share this because you've been in this this because you've been in this field for so long and you field for so long and you know there's a lot of know there's a lot of hope and research.

hope and research. This is so true. And This is so true. And again, thank again, thank you for allowing you for allowing me to be on the podcast so that I can bring the message to I can bring the message to each of your each of your viewers viewers that the fate of your brain is in your hands. It is in your hands. It depends on the choices depends on the choices you make every day. They won't give you this as won't give you this as medicine. There are no medicine. There are no intravenous or intravenous or oral oral oral medications that can medications that can slow the slow the slow the progression of progression of progression of Alzheimer's disease Alzheimer's disease once it is once it is diagnosed. So, diagnosed. So, again, it all comes down again, it all comes down to to to prevention. And that's been my life's work for the my life's work for the last 40 years: giving people these giving people these tools to tools to keep their brains keep their brains intact. So, where intact.

How to protect your brain as you age

So, where would you recommend that those would you recommend that those listening to us start? listening to us start? Which of them are the Which of them are the most important? If most important? If you had to name you had to name a few of the most important a few of the most important issues to issues to start with, what would they be?

?? I love this I love this question because I have a question because I have a favorite answer favorite answer that I've formulated over the that I've formulated over the past few months: I'm past few months: I'm often asked, what is

the often asked, what is the most important thing? Is this most important thing? Is this exercise? Is it exercise? Is it proper nutrition, sleep, communication,, sleep, communication, walks in walks in nature or limiting nature or limiting stress? What is the stress? What is the most important thing I most important thing I can advise you to can advise you to do right now?

do right now? Here it is. Accept Here it is. Accept the fact that you the fact that you control the destiny of your control the destiny of your brain. This is the brain. This is the most important step most important step we can we can take today. This is the take today. This is the most important thing you most important thing you can learn in can learn in the context of the context of risk reduction that we are risk reduction that we are talking about. After that, talking about. After that, we can fill in we can fill in the gaps: exercise is the gaps: exercise is fundamentally fundamentally important. Nutrition is important. Nutrition is fundamentally fundamentally fundamentally important. Sleep is important. Sleep is fundamentally fundamentally fundamentally important. These are critically important. These are critically important pillars that important pillars that make up a brain health program.

brain health program. Heart health, Heart health, bone health, bone health, cancer resistance, cancer resistance, diabetes resistance program. All these diabetes resistance program. All these questions depend on questions depend on our choices, which our choices, which have a huge impact. In other words, we other words, we choose what to eat. No choose what to eat. No one is one is force-feeding us. We choose the force-feeding us. We choose the time when we finish our time when we finish our coffee, which means coffee, which means the duration and quality of the duration and quality of our sleep. And we our sleep. And we choose whether or not to put on choose whether or not to put on sneakers every day sneakers every day and get some and get some exercise. Lifestyle choices determine the fate of your determine the fate of your brain. We ourselves are brain. We ourselves are the architects of what the architects of what will happen. And you know, will happen. And you know, this is a difficult this is a difficult message for message for people in their 30s and 40s. But people in their 30s and 40s. But I can promise I can promise each of you that you wo each of you that you wo n't even n't even blink an eye until you're blink an eye until you're 60 or older. It 60 or older. It happens so happens so quickly, and you will be quickly, and you will be grateful or ungrateful grateful or ungrateful for your choices, because these for your choices, because these things don't affect things don't affect you day after day. They you day after day. They accumulate over the years. So you will. So you will thank God, those of thank God, those of you who are younger and you who are younger and hearing us today, that you have hearing us today, that you have started making started making these changes now.

these changes now. Yes, I couldn't Yes, I couldn't agree more. You agree more. You really snap your really snap your fingers and suddenly fingers and suddenly you're in your 70s, but this…

you're in your 70s, but this… Oh, if only I could snap my Oh, if only I could snap my fingers and be fingers and be in my 50s. That would be in my 50s. That would be cool.

cool. cool. Well, you are a good role model because role model because you are very active and you are very active and lead an amazing lead an amazing life. So I think, life. So I think, yeah, that's what I see in yeah, that's what I see in people, and it's never too people, and it's never too late, people late, people listening to us, it's never too listening to us, it's never too late, wherever you are, late, wherever you are, start now. Do you start now. Do you agree with this?

agree with this? Absolutely agree, and I Absolutely agree, and I think if you look think if you look at real at real intervention intervention intervention studies, like the studies, like the recently recently recently published work by published work by Dr. Rudolf Dr. Rudolf Tanzi at Harvard. It Tanzi at Harvard. It was clearly was clearly demonstrated there that demonstrated there that for for for Alzheimer's patients, Alzheimer's patients, lifestyle changes and lifestyle changes and interventions can interventions can and do have a and do have a significant impact on the significant impact on the rate of cognitive rate of cognitive decline. So rest decline. So rest assured, it's not too late. I assured, it's not too late. I mean, here are people who have been who have been fully diagnosed.

fully diagnosed. Yeah, it's so exciting to me Yeah, it's so exciting to me, and people, and people really don't really don't know that. So, what know that.

Lab tests for proactive brain health

So, what basic tests basic tests should a person have? Are should a person have? Are there any key there any key tests or tests or examinations that anyone should undergo anyone should undergo to make sure there are to make sure there are no problems to deal with and to be deal with and to be proactive?

proactive? proactive? Absolutely, and I think Absolutely, and I think we've already discussed them. Oddly enough we've already discussed them. Oddly enough, people, people ask, "Oh, what kind of brain lab tests brain lab tests should I do should I do to find out if I'm at to find out if I'm at risk?" You know, there are some of them that are quite, there are some of them that are quite specific to specific to Alzheimer's disease.

Alzheimer's disease. We'll talk about them in a We'll talk about them in a moment. But I want moment. But I want to say that fasting to say that fasting blood sugar and insulin levels blood sugar and insulin levels, as well as, as well as glycated glycated glycated hemoglobin—this is hemoglobin—this is extremely important extremely important for understanding your for understanding your risk. Another very, risk. Another very, very sophisticated very sophisticated medical device medical device that you can that you can get your hands on is a get your hands on is a regular measuring regular measuring tape that you can use tape that you can use to measure your to measure your stomach and waist circumference to stomach and waist circumference to determine your determine your determine your waist- waist- waist- to-hip ratio. And you know, an to-hip ratio. And you know, an increased increased increased waist- waist- waist- to-hip ratio is a significant to-hip ratio is a significant risk factor for risk factor for developing developing developing Alzheimer's disease. So I Alzheimer's disease. So I want to say that we're want to say that we're not talking about anything not talking about anything too complicated. And most too complicated. And most likely, these are likely, these are tests, at least tests, at least some of them, that people some of them, that people already have. Another one already have. Another one that I would add to this that I would add to this list, and which is worth list, and which is worth getting even for young getting even for young people, is people, is homocysteine. H-O-M-O- C- I-S-T-E-I-N. What is this?

C- I-S-T-E-I-N. What is this? Homocysteine ??is a Homocysteine ??is a marker of a metabolic marker of a metabolic pathway in the body pathway in the body called methylation. And called methylation. And if methylation, this if methylation, this process, is not process, is not adequate, adequate, adequate, homocysteine ??levels increase. Elevated. Elevated homocysteine ??is a homocysteine ??is a risk factor for risk factor for cardiovascular cardiovascular cardiovascular disease and disease and Alzheimer's disease.

Alzheimer's disease. Very simple analysis. Very simple analysis. And the coolest thing about And the coolest thing about homocysteine ??is that it's homocysteine ??is that it's easy to fix.

Methylated Methylated B vitamins almost always solve this B vitamins almost always solve this problem problem problem. I had. I had elevated elevated elevated homocysteine ??levels due to a homocysteine ??levels due to a genetic genetic genetic trait I trait I have. But this is not have. But this is not something unusual.

something unusual. About 28% of Americans have a Americans have a genetic genetic genetic trait, or whatever you want to trait, or whatever you want to call it, a call it, a variation called variation called MTHFR. And you will find out MTHFR. And you will find out about this if you do about this if you do genetic testing, which has become so, which has become so common now; common now; sequence your sequence your genome and it will show genome and it will show if you have the MTHFR polymorphism. And MTHFR polymorphism. And if there is, you are at risk of if there is, you are at risk of having elevated having elevated homocysteine, and in homocysteine, and in that case you that case you take a take a methylated methylated methylated B vitamin complex. Problem B vitamin complex. Problem solved. In general, there are solved. In general, there are those who need those who need a little more. They might a little more. They might need something need something else, like else, like trimethylglycine or trimethylglycine or something like that. But in something like that. But in my case, as in the my case, as in the case of almost case of almost everyone, a good everyone, a good serving of methylated — necessarily — necessarily methylated — B-complex vitamins will lower B-complex vitamins will lower homocysteine ??levels.

homocysteine ??levels. with these problems: with these problems: problems problems problems related to related

to blood sugar, blood sugar, insulin, and insulin, and homocysteine. That homocysteine. That makes everything very makes everything very simple, doesn't it?

At least from the At least from the perspective of laboratory perspective of laboratory diagnostics in the diagnostics in the early stages, this provides early stages, this provides excellent information excellent information that allows you that allows you to determine the risk, but to determine the risk, but you can change that risk you can change that risk. So, this is. So, this is actionable information, and that's actionable information, and that's exactly what we need.

exactly what we need. You know, actionable You know, actionable information from a information from a typical typical typical neurological neurological neurological exam that exam that suggests suggests suggests you have dementia. An effective you have dementia. An effective solution would be: "well, solution would be: "well, we'll prescribe you we'll prescribe you some medication." some medication." The medication is not working, and it is The medication is not working, and it is already a very late stage.

already a very late stage. For me, this is not For me, this is not actionable information. I actionable information. I don't want to wait and don't want to wait and make people make people wait until a wait until a problem arises. Again problem arises. Again, you know, the roof, you know, the roof needs to be fixed while needs to be fixed while the sun shines. Let's be the sun shines. Let's be proactive, not proactive, not reactive. So, you reactive. So, you know, these are simple know, these are simple analyses. Now, having analyses. Now, having said that, in the book I said that, in the book I talk about more talk about more complex types of complex types of tests, and the one I'm going to tests, and the one I'm going to mention today is, I mention today is, I think, think, think, for for for high- high- high- risk people who have risk people who have certain genetic certain genetic risk factors, like risk factors, like APOE4, or other APOE4, or other metabolic problems, like diabetes. Or,, like diabetes. Or, you know, the biggest you know, the biggest risk factor for risk factor for Alzheimer's disease, Alzheimer's disease, unfortunately, is your age, and unfortunately, is your age, and what can you what can you do about it? So this test do about it? So this test is called PTA 217. P, is called PTA 217. P, then the word TAU, and then the word TAU, and then the number 217. PTA 217 is an extremely is an extremely sensitive and sensitive and specific marker of Alzheimer's risk that is Alzheimer's risk that is actually useful actually useful in determining not in determining not only only only Alzheimer's disease itself, but also the Alzheimer's disease itself, but also the trajectory of how trajectory of how it will it will it will get worse over get worse over time if time if diagnosed.

diagnosed. The good news The good news is that this is a is that this is a test that has gone from being test that has gone from being research-based, research-based, research-based, available only as an available only as an experimental experimental experimental lab lab lab test, to being test, to being fully fully fully approved and approved and available at your available at your local lab local lab or doctor's office. PTA or doctor's office. PTA 217. Given my age —71 years old—and family —71 years old—and family history, I decided to history, I decided to have a blood test for have a blood test for PTA 217. I don't know PTA 217. I don't know the results yet. Not the results yet. Not sure why it's sure why it's taking so long, taking so long, but I should know but I should know that number very, very that number very, very soon. And the good soon. And the good news is that news is that with drastic with drastic lifestyle changes, lifestyle changes, we could we could keep this rate keep this rate under control and once again under control and once again change the risk change the risk and trajectory. But this, and trajectory. But this, you know, is definitely a you know, is definitely a much more complex much more complex approach. Additionally, in the approach. Additionally, in the book, we describe book, we describe the availability of online cognitive testing cognitive testing that that that assesses both assesses both individual individual individual performance and the performance and the caregiver's condition. So this is something that caregiver's condition. So this is something that people can people can read about in " Brain Defenders," which Brain Defenders," which lists a website to lists a website to go to. I go to. I believe that people believe that people over the age of 65 should over the age of 65 should have an annual have an annual cognitive assessment, cognitive assessment, which takes 15 minutes which takes 15 minutes during a check-up with their during a check-up with their family doctor or general family doctor or general practitioner. We practitioner. We do a colonoscopy do a colonoscopy every few years.

every few years. We do a We do a PSA test to detect PSA test to detect prostate cancer. Women prostate cancer. Women are having their are having their are having their bone density checked. Don't neglect your brain. The sooner we neglect your brain. The sooner we start aggressively start aggressively adjusting adjusting adjusting

metabolism and the other metabolism and the other interventions we interventions we talk about in the book, the talk about in the book, the better the brain will be better the brain will be. Yes, I have to. Yes, I have to say something about say something about homocysteine: I think homocysteine: I think everyone in this everyone in this community should get community should get it checked it checked for bone health as well for bone health as well, because when, because when homocysteine ??levels homocysteine ??levels are elevated, it are elevated, it causes inflammation, causes inflammation, changes the cross- changes the cross- links in collagen, and links in collagen, and makes bones more makes bones more fragile, meaning they're fragile, meaning they're easier to break. So easier to break. So it plays a it plays a huge role, and as huge role, and as you said, it's you said, it's easy to adjust, easy to adjust, but you need to be aware of it but you need to be aware of it. And often, as you. And often, as you mentioned, mentioned, mentioned, there are there are there are functional functional functional ranges—that is, ranges—that is, the values ??within the values ??within normal limits in your normal limits in your analyses, marked in analyses, marked in green, and there are green, and there are optimal ranges. So what is the. So what is the optimal optimal optimal homocysteine ??level in your homocysteine ??level in your opinion? Is it somewhere below opinion? Is it somewhere below eight?

eight? eight? Below nine? Yes, that's right Below nine? Yes, that's right. Because. Because often the analysis shows often the analysis shows 15 or 14, and it 15 or 14, and it can still be in the "green can still be in the "green zone" if the indicator zone" if the indicator does not exceed 15. And so does not exceed 15. And so I think I think this is how it works.

this is how it works. Elevated Elevated Elevated homocysteine ??does homocysteine ??does several things that are several things that are harmful to health. It harmful to health. It threatens the lining of threatens the lining of blood vessels. This does blood vessels. This does not bode well not bode well. Firstly. And second, when it's second, when it's metabolized into metabolized into something called something called homocysteine, it threatens homocysteine, it threatens mitochondria, the mitochondria, the energy producers energy producers inside the cell, inside the cell, including including including mitochondria in mitochondria in microglial microglial microglial cells—the cells—the cells—the brain's immune system, which is the brain's immune system, which is the main focus of main focus of our book. When our book. When mitochondria, the mitochondria, the powerhouses of powerhouses of these immune these immune brain cells, are brain cells, are compromised by compromised by elevated elevated elevated homocysteine, it homocysteine, it turns them from “ brain protectors” into brain protectors” into their evil counterparts, their evil counterparts, “ “ “ brain destroyers.” So brain destroyers.” So homocysteine ??plays a homocysteine ??plays a huge role.

huge role.

Environmental toxins, plastics, and brain health

Elevated Elevated Elevated blood sugar levels, insulin blood sugar levels, insulin resistance resistance, inhalation of air with a, inhalation of air with a high content of so- high content of so- called PM 2.5 particles. These called PM 2.5 particles. These particles, which are part of particles, which are part of air pollution, air pollution, are why it's are why it's important for us to know the levels of important for us to know the levels of air pollution air pollution in the cities where we live, or hopefully in, or hopefully in our homes. We our homes. We need to know the level of need to know the level of these PM 2.5 particles and, if these PM 2.5 particles and, if necessary, necessary, necessary, use an use an use an use an air purifier.

air purifier. We use an We use an air purifier air purifier called Lyken, like called Lyken, like the lichen in the forest, the lichen in the forest, L-I-C-H-E-N, which purifies L-I-C-H-E-N, which purifies the air in the forest. And it the air in the forest. And it not only does this, but it also not only does this, but it also measures measures measures air quality at the same time. This is air quality at the same time. This is very important. You know, very important. You know, we care about the quality of the we care about the quality of the water we drink, water we drink, right? We drink from right? We drink from glass containers, not glass containers, not plastic ones because of plastic ones because of microplastics, etc. We microplastics, etc. We don't drink tap water don't drink tap water if we know that if we know that city water is city water is unsafe. And unsafe. And most most most commercial commercial commercial municipal municipal municipal tap water tap water is not ideal. But how is not ideal. But how often do we often do we think about the think about the quality of the air we quality of the air we breathe in buildings,

breathe in buildings, offices, or homes, where offices, or homes, where the average the average the average American American American spends over 90% of their time? So we their time? So we should be aware of this, should be aware of this, get the data, and get the data, and if there's a problem, if there's a problem, use an use an use an air purifier and air purifier and reduce the risks, reduce the risks, including things including things like burning like burning incense. Oh, that's great incense. Oh, that's great for calming down, what's for calming down, what's it called? Er… it called? Er… Oh, it's called… Oh, it's called… Aromatherapy.

Aromatherapy. Aromatherapy. Aromatherapy. Yes. Aromatherapy. Yes. Aromatherapy. I Aromatherapy. I like it. This seems to be like it. This seems to be useful for you. But useful for you. But burning incense burning incense significantly increases significantly increases the concentration of these the concentration of these dangerous particles in the dangerous particles in the air you air you breathe. If you breathe. If you smell it, you smell it, you are inhaling PM 2.5 particles in are inhaling PM 2.5 particles in increased increased increased concentrations. And that's concentrations. And that's not good for not good for your health, your health, heart, or brain at all. So are air fresheners, those devices air fresheners, those devices that emit volatile that emit volatile organic compounds, organic compounds, especially those especially those found, found, found, say, in taxis. I'm not say, in taxis. I'm not naming a specific naming a specific brand. You get into brand. You get into such a car, and there is some device turned on in the such a car, and there is some device turned on in the cigarette lighter socket cigarette lighter socket or on the or on the air conditioner vent air conditioner vent. My God, this is not doing you any good in any way.

not doing you any good in any way. So I strongly recommend So I strongly recommend purchasing an purchasing an air purifier, placing air purifier, placing it where you it where you spend the most spend the most time, or in every time, or in every room, and paying room, and paying attention to the quality of the air attention to the quality of the air you breathe. Here are you breathe. Here are some scientific some scientific facts. One interesting facts. One interesting study study study published in published in Toronto, or where the data Toronto, or where the data was collected in was collected in Toronto, Canada, Toronto, Canada, showed that the showed that the closer you live to a closer you live to a major major major highway—and highway—and highway—and major highways are major highways are significant sources of significant sources of these particles, PM 2.5, as well these particles, PM 2.5, as well as exhaust as exhaust fumes, which contain fumes, which contain a lot of these PM a lot of these PM 2.5 particles—the higher your 2.5 particles—the higher your risk of developing risk of developing Alzheimer's disease.

Alzheimer's disease. Oh my god, who would have Oh my god, who would have thought? Well, you know, thought? Well, you know, maybe your house maybe your house is located a mile is located a mile from a major from a major highway. And highway. And you know, before you know, before you decide to sell your you decide to sell your house and move house and move because you listened to because you listened to this podcast today, this podcast today, get a good quality get a good quality air purifier and air purifier and solve this solve this problem. You can problem. You can very quickly, in a very quickly, in a matter of hours, matter of hours, significantly reduce significantly reduce the level of PM the level of PM 2.5 particles in the air you 2.5 particles in the air you breathe. You know, we again pay a lot of pay a lot of attention to the quality of our attention to the quality of our water. What about water. What about the air we the air we breathe? You know, this is breathe? You know, this is so important. We have so important. We have all kinds of all kinds of air filters in our house.

air filters in our house. The usual, you know, The usual, you know, we had we had problems for years when my problems for years when my kids, when they were kids, when they were younger, were constantly younger, were constantly getting ear getting ear infections, and of course it infections, and of course it was because of our was because of our filtration system in the filtration system in the house. But we house. But we fixed it. However, I fixed it. However, I still have an still have an air purifier because it air purifier because it really does capture so really does capture so much of everything, and much of everything, and why would you need it in the why would you need it in the air? I totally air? I totally agree, and in your agree, and in your book you really go into book you really go into detail about detail about everything, but you also everything, but you also spend time on spend time on plastic, because I don't plastic, because I don't think people think people realize the impact realize the impact plastic has on the brain.

Want to shed some light on this Want to shed some light on this??? Of course. And as you Of course. And as you probably know, probably know, about half a percent of about half a percent of your brain and my your brain and my

brain, unfortunately, is brain, unfortunately, is made up of made up of plastic. This is quite plastic. This is quite frightening. And you know, for frightening. And you know, for years we've liked to years we've liked to use the use the use the term " neuroplasticity," neuroplasticity," neuroplasticity," because it refers to because it refers to the ability of the ability of brain cells to make brain cells to make new connections and so on.

new connections and so on. Maybe we could Maybe we could apply that apply that term here. I term here. I mean, mean, mean, neuroplasticity— neuroplasticity— plasticity in the brain—is a plasticity in the brain—is a threat for two threat for two important reasons.

First, they are solid First, they are solid particles that particles that irritate tissues, irritate tissues, which can cause which can cause inflammation. And secondly, inflammation. And secondly, they contain they contain hormone mimics, hormone mimics, if you will, different if you will, different types of plasticizers types of plasticizers or or or plastic additives, like plastic additives, like bisphenol A, which are bisphenol A, which are endocrine endocrine endocrine disruptors and disruptors and really pose a really pose a clear and real clear and real danger not only to the danger not only to the brain but to the entire brain but to the entire body. We're body. We're starting to see starting to see ideas about ideas about using certain using certain types of filtration to types of filtration to purify the blood to purify the blood to at least get rid of the at least get rid of the load of these load of these microplastics in the microplastics in the blood. I don't yet blood. I don't yet know a way to know a way to cleanse the brain of cleanse the brain of these microplastics.

these microplastics. This will certainly be This will certainly be impressive. But I guess, well impressive. But I guess, well, we are where we are, we are where we are today. Interestingly, I today. Interestingly, I just had a just had a blood test for blood test for microplastics and the microplastics and the result was result was low, but not low, but not zero. So, they zero. So, they were discovered. Therefore, I were discovered. Therefore, I believe that we must believe that we must act act act proactively and proactively and reduce our reduce our exposure to these exposure to these microplastics. It is microplastics. It is in the air we in the air we breathe. This is breathe. This is undeniable. Again undeniable. Again, this is a call, this is a call to buy a quality to buy a quality air purifier for where air purifier for where you spend you spend the most time. And secondly, we must secondly, we must limit our exposure through the limit our exposure through the food food food and drinks we and drinks we consume. You know, it makes consume. You know, it makes me shudder me shudder when I see these plastic water bottles that plastic water bottles that are brought to are brought to sports fields for kids to drink.

for kids to drink. They are standing in the sun They are standing in the sun in the back of a truck. in the back of a truck. Who knows how long Who knows how long they were there. And they were there. And the number of particles in the number of particles in these bottles is simply these bottles is simply incredible. But incredible. But microplastics are definitely present microplastics are definitely present in canned in canned soups. You know, anything soups. You know, anything with a plastic with a plastic lining, even lining, even some metal some metal water containers are water containers are better, but the lid better, but the lid is still a source of is still a source of microplastics. So, microplastics. So, you know, there are many you know, there are many sources of microplastics. I give this entire. I give this entire list in my book. I list in my book. I don't think don't think they they they can be completely can be completely avoided in today's world. This is really avoided in today's world. This is really impossible. But there are impossible. But there are some steps you can take some steps you can take to reduce the risks, and to reduce the risks, and I think that will be I think that will be valuable.

valuable. valuable.

Emerging therapies and the future of brain protection

OK. When you OK. When you spoke in February, spoke in February, you talked about some you talked about some very interesting new very interesting new treatments treatments treatments that I would like you to that I would like you to talk about in more detail because I find them because I find them fascinating, like fascinating, like gamma-frequency gamma-frequency gamma-frequency stimulation—it stimulation—it stimulation—it just blew me away just blew me away when you talked about it when you talked about it. But do. But do you want to share what you you want to share what you think is think is most most most promising?

promising? promising? Yes. And you know, in the new Yes. And you know, in the new book " book " Brain Defenders," we first Brain Defenders," we first talk about the key talk about the key role of the immune system.

role of the immune system. Secondly, about what Secondly, about what causes this immune causes this immune system to malfunction system to malfunction. And third, about the possibilities that we have to that we have to return return return microglial microglial microglial cells to the M2 state, cells to the M2 state, so that they become so that they become supportive again. And when supportive again. And when I say this, please I say this, please understand that this is a understand that this is a central, key central, key area of ??research that area of ??research that goes far beyond what goes far beyond what we're we're we're talking about today and the talking about today and the way of life way of life that we lead; that we lead; Leading institutes are Leading institutes are exploring exploring exploring all sorts of new ideas all sorts of new ideas to make to make microglia microglia microglia supportive and supportive and divert them from divert them from destructive action. It's the destructive action. It's the holy grail when it comes holy grail when it comes to to to brain health and reducing the brain health and reducing the risk of degeneration, and risk of degeneration, and even, as I'll tell even, as I'll tell you in a moment, you in a moment, treating treating Alzheimer's patients. So Alzheimer's patients. So the brain in a normal the brain in a normal healthy state has a healthy state has a beautiful beautiful beautiful sinusoidal—what does sinusoidal—what does that mean?—a beautiful that mean?—a beautiful rhythm, like this frequency of rhythm, like this frequency of electrical electrical electrical activity in the background, activity in the background, oscillating up and down. This is music down. This is music performed by a performed by a performed by a highly coordinated highly coordinated highly coordinated orchestra. The entire brain orchestra. The entire brain actually takes on actually takes on this background frequency. It's this background frequency. It's like an orchestra marching to the like an orchestra marching to the beat of a drum. Everyone beat of a drum. Everyone plays accurately, in time, and the result is, and the result is beautiful beautiful beautiful music. When the brain music. When the brain degrades, there is a degrades, there is a correlation with the loss of correlation with the loss of this wonderful this wonderful sinusoidal sinusoidal sinusoidal rhythm. So instead of a rhythm. So instead of a nice nice nice sine wave, sine wave, it breaks up. It's it breaks up. It's like a transition from like a transition from sinus rhythm sinus rhythm to atrial to atrial fibrillation, for example, and this is what happens during brain degeneration. But now we brain degeneration. But now we understand that the loss of understand that the loss of this gamma oscillation is not just something not just something that coexists with that coexists with brain degradation. This brain degradation. This contributes to its emergence.

So once this was So once this was recognized in recognized in research, scientists research, scientists started asking started asking themselves: what if we themselves: what if we could recreate this could recreate this wonderful sinusoidal wonderful sinusoidal background gamma oscillation? And they oscillation? And they started looking for all started looking for all sorts of relatively sorts of relatively non-invasive ways to non-invasive ways to do it. And what are the do it. And what are the main entrances to the brain? Well, one of them is what? Well, one of them is what we see, and the we see, and the other is what we hear other is what we hear in terms of what in terms of what can be changed over can be changed over time. You wouldn't time. You wouldn't think that eating a think that eating a certain food, for example, would necessarily affect the, would necessarily affect the timing of something. In timing of something. In this case, it's this case, it's gamma oscillation. And gamma oscillation. And what the researchers what the researchers found was really found was really fascinating: In a fascinating: In a rodent model that has normal has normal gamma oscillations in the gamma oscillations in the brain in a healthy state — lab brain in a healthy state — lab mice — when they mice — when they flash a light into the flash a light into the eyes of that mouse at a eyes of that mouse at a certain frequency, which is certain frequency, which is 40 times per 40 times per second, which is amazing — they tried they tried all sorts of different all sorts of different frequencies, but when they frequencies, but when they tuned in, tuned in, monitoring the EEG, they monitoring the EEG, they were looking at 20, 40, 60, 80 were looking at 20, 40, 60, 80 Hz. When they reached Hz. When they reached 40 hertz, the gamma frequency 40 hertz, the gamma frequency resumed. Oho. We have resumed. Oho. We have just restored this just restored this wonderful healing wonderful healing background rhythm in the brain.

Then they began to Then they began to investigate how investigate how effective it might be effective it might be at restoring at restoring gamma frequencies in a gamma frequencies in a mouse model of mouse model of Alzheimer's disease, which exhibits, which exhibits cognitive decline, cognitive decline, accumulates beta- amyloid, and generally all the amyloid, and generally all the hallmarks of Alzheimer's hallmarks of Alzheimer's that we see. You'll that we see. You'll notice what I said: notice what I said: they accumulate beta- amyloid. This is a amyloid.

This is a consequence, not the consequence, not the root cause. So, root cause. So, you know, the brain in you know, the brain in Alzheimer's disease Alzheimer's disease does accumulate does accumulate beta-amyloid, but that's beta-amyloid, but that's not the cause of the not the cause of the problem. So, they problem. So, they exposed this mouse to exposed this mouse to light that light that flickered at a frequency of 40 flickered at a frequency of 40 hertz. And now, look hertz. And now, look what they saw.

First, microglia First, microglia returned from the returned from the M1 state—destroyers—to the M1 state—destroyers—to the M2 state—protectors of M2 state—protectors of the brain. Second, the brain. Second, the loss of brain tissue the loss of brain tissue that was typically that was typically seen in these seen in these mice with mice with Alzheimer's disease Alzheimer's disease was reduced. Third, was reduced. Third, cognitive functions cognitive functions were preserved were preserved thanks to the flashing of thanks to the flashing of light in their eyes at a light in their eyes at a frequency of 40 hertz.

frequency of 40 hertz. Dr. Li-Hui Tsai from Dr. Li-Hui Tsai from MIT MIT MIT took the took the research even further, research even further, and this is exactly what we and this is exactly what we needed. And she needed. And she said, "Okay, I said, "Okay, I understand." I understand." I dedicated my dedicated my life to studying life to studying Alzheimer's disease Alzheimer's disease because my grandmother because my grandmother had the disease, and I had the disease, and I remember from childhood what remember from childhood what it was like. This is from her it was like. This is from her TED talk. So TED talk. So she organized she organized a study in which a study in which people with people with Alzheimer's disease were exposed to 40 Hz light through 40 Hz light through glasses and 40 Hz sound glasses and 40 Hz sound through headphones for a set amount of time every day.

The device appears to The device appears to be called "Spectre." be called "Spectre." She applied She applied it, and, imagine, it, and, imagine, proved a significant proved a significant slowdown in the rate of slowdown in the rate of brain brain brain tissue loss in patients with tissue loss in patients with Alzheimer's disease. I will add that there. I will add that there was a was a was a dramatic reduction in the dramatic reduction in the rate of cognitive rate of cognitive decline, especially in activities of daily living: activities of daily living: the ability to the ability to bathe independently, brush bathe independently, brush teeth, choose clothes, teeth, choose clothes, etc., and this is truly etc., and this is truly significant, much more significant, much more impressive than any drug that has been developed.

So, you know, phase three So, you know, phase three clinical trials are underway now. And can you. And can you imagine, no imagine, no side effects, side effects, just a flash of just a flash of light in the light in the patient's eyes and a sound. So, patient's eyes and a sound. So, you know, I work with a you know, I work with a company called company called Optosuitics and I got one Optosuitics and I got one of their devices.

of their devices. It is on my It is on my desk. When I'm working desk. When I'm working at my desk, writing or at my desk, writing or doing something, well, preparing doing something, well, preparing slides for slides for presentations, or whatever I'm presentations, or whatever I'm doing at my desk, doing at my desk, paying bills—it's paying bills—it's fun, this light is fun, this light is flashing in the background. You flashing in the background. You don't really don't really notice it notice it flashing, but it flashing, but it helps me. So, it's an helps me. So, it's an exciting technology, that's for sure.

, that's for sure. People can already People can already buy this or buy this or Oh yeah, oh yeah, people are already Oh yeah, oh yeah, people are already buying it now, this buying it now, this company is called company is called optoudics opt i cs.com optoudics opt i cs.com Thank you, well, anyway, that was… And anyway, that was… And we could go we could go on and on and on. And the book, it's just, it's just full of everything.

full of everything. If you If you enjoyed this, there is so much more in the book. She is wonderful. I'm. She is wonderful. I'm so glad it's so glad it's coming out today, the coming out today, the same day the same day the podcast comes out. This is podcast comes out. This is so exciting. Is there so exciting.

Resources from Dr. Perlmutter

Is there anything else you would like to anything else you would like to add? Oh, tell add? Oh, tell people, if they people, if they want to know want to know more, you have a more, you have a really interesting really interesting way to collaborate with way to collaborate with you.

you. you. This is a new development. I This is a new development. I became one of the people became one of the people collaborating with the collaborating with the company that company that created the so-called created the so-called avatar of Dr.

avatar of Dr. Perlmutter. What does this Perlmutter. What does this mean? This means mean? This means that if you visit that if you visit drpromuter.com, drpromuter.com, you drpromuter.com, drpromuter.com, you can follow the can follow the link and link and interact with my interact with my virtual copy. I'm virtual copy. I'm definitely not giving you definitely not giving you medical advice. This is medical advice. This is your doctor's business.

your doctor's business. But it's a way to really get inside my get inside my head from the perspective of head from the perspective of all the research all the research I've done over the years.

Everything I've written, Everything I've written, published, published, published, spoken about in lectures, spoken about in lectures, etc. And I'll tell you, etc. And I'll tell you, this avatar is this avatar is smarter than me.

smarter than me. So this is the place to So this is the place to go. And go. And you mentioned that you mentioned that this book is coming out today, Brain Defenders. I'm Brain Defenders. I'm very proud of it because very proud of it because it really it really brings together everything I've brings together everything I've done in my entire done in my entire life. She explains, life. She explains, you know, the carbohydrate you know, the carbohydrate mystery from mystery from Grain Brain. It Grain Brain. It explains the role and explains the role and connection of the connection of the gut microbiome to the brain, gut microbiome to the brain, which I described in the book Brain Maker. The role of stress in Brain Maker. The role of stress in disconnecting us disconnecting us from the higher parts of from the higher parts of the brain that make us the brain that make us human is something we human is something we discussed in Brainwash with Dr. Austin with Dr. Austin Perlmutter. It Perlmutter. It addresses the role of addresses the role of metabolic metabolic metabolic health, which we health, which we discussed in the book “Drop discussed in the book “Drop Acid,” which was about Acid,” which was about lowering lowering lowering uric acid levels. What's uric acid levels. What's fascinating to me is that fascinating to me is that everything I've been talking about everything I've been talking about for four for four decades is decades is coming together on the coming together on the brain's immune system through brain's immune system through this incredible new this incredible new word, word, immunometabolism.

immunometabolism. immunometabolism. So, this is a very So, this is a very exciting time indeed. exciting time indeed. Oh, I can't Oh, I can't thank you enough. And I can't. And I can't wait any longer. It's like wait any longer. It's like a child, you know, you a child, you know, you let them out into the world let them out into the world and suddenly you see all the and suddenly you see all the consequences. So I want to consequences. So I want to hear feedback from hear feedback from everyone who reads everyone who reads this book and find out this book and find out what exactly you will start what exactly you will start doing today.

doing today. Because it all Because it all matters, every matters, every little thing, and you little thing, and you talked about so much in the talked about so much in the podcast: any of podcast: any of this, just start this, just start somewhere. And you know you'll somewhere. And you know you'll help your help your brain, you'll help brain, you'll help your bones. In any case, I'm very any case, I'm very happy for you and happy for you and thank you very much for sharing thank you very much for sharing this.

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link to the book on drperlmutter.com. If you follow them, If you follow them, you can get you can get discounts on many discounts on many different products and different products and all kinds of gifts for all kinds of gifts for ordering a book from ordering a book from any online bookseller, be bookseller, be it Barnes&Noble, Amazon, or any other.

any other. Oh, great. So you know Oh, great. So you know what I'll do? I'll add what I'll do? I'll add that link to the that link to the release notes, release notes, so follow it so follow it to get all to get all these awesome bonuses. A.

these awesome bonuses. A. Thank you for inviting Thank you for inviting me today. me today. It was nice. It was nice. I hope you I hope you enjoyed my enjoyed my interview with Dr.

interview with Dr. Perlmutter as much as Perlmutter as much as I did. And I did. And now, here are some actionable now, here are some actionable steps you can steps you can start taking start taking today to today to keep your brain keep your brain healthy and prevent healthy and prevent cognitive cognitive cognitive impairment. All impairment. All the references the references mentioned by Dr.

mentioned by Dr. Perlmutter will be in the Perlmutter will be in the release notes. release notes. And if you know And if you know someone who is struggling someone who is struggling with with with Alzheimer's, or Alzheimer's, or have noticed someone have noticed someone starting to forget starting to forget things or lose their things or lose their memory, please memory, please share this, because share this, because it can be helpful it can be helpful for everyone. I think for everyone. I think you will be doing them a you will be doing them a great service, and it is great service, and it is inspiring because there is so inspiring because there is so much hope and so much much hope and so much that we that we can do. So I can do. So I hope you will hope you will help me help me spread this important spread this important information.

information. information. Thank you so much for being with us, Thank you so much for being with us, and I look forward and I look forward to seeing you in the to seeing you in the