

EPISODE 329

Stop Brain Shrinkage and Activate Your Healthy Brain Genes – With Guest Dr. David Perlmutter

Shawn Stevenson: Welcome to *The Model Health Show*. This is fitness and nutrition expert, Shawn Stevenson, and I'm so grateful for you tuning in with me today.

This episode is very special. We have on a return guest to *The Model Health Show*, someone who's an absolute expert on brain health. Multiple time New York Times bestselling author, and his last book was phenomenal.

Alright? Began to change the conversation out there when we're talking about health and wellness, specifically of our brains, and it's none other than Dr. David Perlmutter.

And he's got an updated revised expanded edition of 'Grain Brain' which I got an early copy of, and I was going back and forth looking at the old edition/new edition, old edition/new edition, and the new edition takes out Bobby Brown but it adds in Johnny Gill, and it's okay. Alright?

So follow me. Follow me on that. But you know, it's truly enlightening, and to see the updated information to reaffirm what we've been talking about. You know?

Because there's a conversation now, a lot of people are afraid of gluten. A lot of people are like, "What is there to be afraid of? It's not a big deal. We've been eating bread forever. I don't have celiac." Right? Celiac.

And so my concern is we do know that celiac disease is something that is just crushing people's livelihoods, and it's from gluten. It's from bread, right? And other gluten containing grains.

Just keep this in mind that bread can actually hurt people. That should just stop us in our tracks and just think about that a little bit. Like wow, it can destroy somebody's gastrointestinal well-being and cause issues with mental health, and autoimmunity.

It is something. It is possible. Then we extend it out and say, "Well that's not everybody." Well just to know that this is a potential problem should just open our minds to consider that, "Man, maybe this is relating to the skin issues that I have, or the issues that I have with my focus, or the migraine headaches."

And the list goes on and on. There are so many different things that are now being linked to the consumption of this conventional wheat.

Because also, we've talked about this in the past. And by the way, I'm not- I had French toast like a couple days ago. I'm not completely against anything, right?

But I am going to have a tendency towards 90% plus of my nutrition being things that are whole, real, natural foods that have been around a long time, that have nothing but potential upside, and none of these things that are kind of lurking in the darkness in a sense.

And so even I was just watching *Lord of the Rings*, alright? We watched the trilogy again. We kind of waited a little while, and we hit *The Two Towers*, but first of course *Fellowship*. So we're getting a little nerded out right now, but that's what this episode is going to be.

Alright? It's going to be nerded out, so be ready when Dr. Perlmutter comes on. And then of course *The Return of the King*.

And seeing Sam- Samwise Gamgee, right? And Frodo, they're trying to get the ring into Mordor. Right? And all they've got is this Elven bread. They've got the Elfish bread. I don't know if you speak Elvish, but they do. Okay? "Mellon." That means 'friend,' I think. Alright?

Okay, this is getting- I'm really back in like I'm a nerd.

So they had the bread wrapped up in like- it looked like a collard green, to be honest. And they were just kind of pissed. Like, "This is all we've got is the bread."

Alright, so we all have that connection, and it's just keeping this thing in the proper perspective that- okay, just be aware. If you're dealing with a health condition, this might be something that is potentially causing us harm.

And the wheat that we have today is very different from the biblical sense, or ancient scriptures talking about the process of creating bread, and the health that might have been seen back in the day. It's very different.

We have this genetically modified dwarf wheat that is what we're commonly consuming. So even if you're like on the bread train heavy, like shift over. Let's get some more 'ancient' grains. Right?

Some heirloom strands of these things, or maybe even shift over and try a different type of grain besides wheat. There are other grains that don't even contain gluten. You know?

So again, this is just something for us to get educated, to have a conversation about, to make sure that we have this in our mental rolodex.

And the reason that I think it's such an important conversation is that our brains are at stake here, and Dr. Perlmutter has some compelling research that we need to pay attention to because it's time.

It's time for a change, not just in our bodies and our physical health, and talking about issues with diabetes, and obesity, and things of that nature, but also in neurodegenerative conditions like dementia and Alzheimer's that are just skyrocketing right now, which we'll talk about in a little bit as well.

So this one is one you want to take notes. Alright? You want to get your pen and paper ready. I don't know if people write anymore.

Have you had this experience where- I know you haven't written for a while, and then you try and write something, it's been months and you just realize like, "I can't even write. Right? It hurts."

My wife, just the other day, she was writing something, she was like, "This hurts." I was like, "So that's a problem." Alright? But it's the type, type. You know?

So even if you're typing your notes, this is one you're going to want to really listen to because again, we're going to get geeked out. Alright? And I love that.

I love that, to have some of those shows where we're really diving in and talking about some of the science. So again, this is one to really tune in, listen close, take some good notes, and you can utilize this data for yourself and also the people that you care about.

Alright? So we're going to get to that in just a moment, but in the conversation talking about our brain health, and also specifically protection from these neurodegenerative diseases, you've got to listen to this.

This was a randomized double blind placebo controlled study. This is the gold standard, alright? And it's a human study, this was done on humans.

This wasn't laboratory animals. This was done with humans; randomized double blind placebo controlled study. This was published in 'The Journal of Alzheimer's Disease' found that raising brain magnesium levels has been proven to restore critical brain plasticity and to improve cognitive function overall. Magnesium. Magnesium.

It's a landmark study - again, this is a human study - and researchers showed that they could reverse brain aging by as much as nine to fourteen years on average in folks who were taking supplemental magnesium.

That is remarkable. Truly remarkable. I've talked about this many times on the show. This is the number one mineral deficiency that we see in our country today, and we're looking at about 70% plus of folks being chronically deficient in magnesium.

Guess what's happening to their brain? And the reason that I'm talking about this specifically in relationship to the brain is that magnesium is responsible for - I've said this before, please listen - over 325 biochemical processes in the body.

And so if it's not present, you're deficient in magnesium, guess what? That's 325 things that your body and your brain cannot do.

But what's so amazing about our bodies, they are resilient. They will figure out ways, kind of robbing Peter to pay Paul within your own tissues to figure stuff out, but that puts us at a net loss.

Right? The struggles- creates struggles with our energy, with our ability to properly move, for example. Magnesium has a huge impact on our muscle function.

And guess what the most important muscle that you have? It's that beautiful brain of yours, alright? And it is in critical need of magnesium as well.

And so here's the issue; number one, food first. Eat magnesium rich foods. Not enough today because magnesium is such an anti-stress related mineral.

It's dealing with a lot of stressors and inflammation in the body. Today we just- even if you're eating a great diet, and exercising, the environment itself is very stressful. You know?

We're exposed to so much that our ancestors were not exposed to. And magnesium gets zapped from our bodies very quickly, so we've got to get those levels up.

In my clinical practice, I would have people take supplemental- oral supplement of magnesium for the most part early in my career, but then it evolved because I saw- people would come in like, "Hey, Shawn. I started taking- I'm feeling better, I'm not having the headache, but when I take the magnesium, I go poop a lot. I go poop a lot." Alright?

And it's causing diarrhea because magnesium is pulling more water to your bowels, alright? And it can create an evacuation. Alright? It's called bile tolerance, and we can't efficiently get your magnesium levels up because your body will have this evacuation process.

And you might even need more magnesium now because you're having diarrhea. Alright? It's not efficient, it's not effective. What is effective is a topical application of magnesium. Alright?

So this is magnesium that you rub onto your skin. It's just like, "Why would that get to where it needs to go on my body? How does it get to my brain?"

Your skin eats, alright? This is why there are so many hormone creams today. It's not taking oral medications. Rub it into your skin. Your skin eats, and magnesium is very bioavailable through the skin when it's done properly.

Super critical extract like the one that I use, that I've been using for many years. Not only does it help improve your sleep quality, not only does it help improve your energy throughout the day, help to speed up recovery.

Man, I can't tell you how many times just having sore muscles and things like that, that healing has been improved.

You know you've heard this before. Taking an Epsom salt bath, that's just one form of magnesium. Right?

There's like citrate, there's stearate, there are so many different forms that we have of magnesium, but this one super critical extract, and it's from earth grown sources.

It's not synthetic. It's about 99% absorbable, and it's from activation products. Ease Magnesium. Go to www.EaseMagnesium.com/model. Again that's www.EaseMagnesium.com/model and you're going to get 15% off of the activation products.

Magnesium spray, and also they have a Deep Soak. There's some information there on the page too that I add to my bath water, and I try to do that at least once every couple of weeks.

Alright? So your brain is depending on magnesium. This is the efficient effective way. You're going to hear more and more about this as the months and years roll on about topical applications of magnesium specifically for all the benefits that it has.

Alright? So pop over, check them out, www.EaseMagnesium.com/model. And on that note, let's get to the Apple Podcasts review of the week.

iTunes Review: Another five-star review titled, 'A Constant Source of Encouragement to Thrive,' by IVC99.

"Shawn, been listening to you for years, but the recent episode on anxiety is the one that finally got me to review. It was by far the most accurate take on it I've heard.

At thirty, I was blindsided by panic attacks, and for a period, it derailed me. I was an easygoing and confident person that suddenly was constantly worried about a heart attack, health issue, death, whatever.

I only began to have relief when I quit trying to make it go away, and I embraced it. I made a friend of my anxiety and used it as a tool to help me appreciate everything; good, bad, whatever. It's all a teacher.

By far, the most real talk on anxiety ever. Thanks for your show. It helps me stay dialed in and motivates me to do my best in all things. Sincerely, I appreciate you."

Shawn Stevenson: Wow, thank you so much for leaving me that review over on Apple Podcasts, and that's such a great share. And wow, I just really appreciate that.

Thank you for sharing a little bit of your story, and referencing the episode that we did with Craig Ballantyne recently, which we'll put in the show notes, and it's just speaking out something that a lot of people have suffering quietly with themselves because we're not having this conversation and talking about these things.

So we talked about some of the nutrition components, but also just the lifestyle and mindset components that are involved in the epidemic going on with anxiety.

And so again, thank you for sharing a little bit of your story.

So everybody, if you've yet to leave a review, please pop over to Apple Podcasts and do so. See? Even this incredible review was waiting. What are you waiting for?

If you've got some value out of the show, pop over, leave a review. I appreciate it so very much. And on that note, let's get to our special guest and topic of the day.

Our guest today is Dr. David Perlmutter, and he is a board certified neurologist and four-time New York Times bestselling author. He serves on the Board of Directors and is a fellow of the American College of Nutrition.

Very, very powerful combination of backgrounds there. He received his MD degree from the University of Miami School of Medicine, and he was also awarded the Leonard G. Roundtree Research Award while he was there.

And he also is a member of the editorial board for the 'Journal of Alzheimer's Disease,' which I just quoted that study about magnesium from there- that was published through there, and has published extensively in peer reviewed scientific journals including the 'Archives of Neurology,' 'Neurosurgery,' and 'The Journal of Applied Nutrition.'

His books have been published in thirty-four languages and include the number one New York Times bestseller, 'Grain Brain: The Surprising Truth about Wheat, Carbs, and Sugar,' with over one million copies in print, and he is back on *The Model Health Show*.

I'd like to welcome Dr. David Perlmutter. How are you doing today, David?

Dr. David Perlmutter: I'm doing great, and you've got to tell your viewers that this is our second go-around, so it's great we get to do it again.

Shawn Stevenson: This the truth, you know? Like people think it's all downhill once you get the top podcast, but stuff happens. Alright?

So last time, your recording, I guess it just disappeared into the ethers on your end. So I'm going to point fingers, but then I'll point it back at us too. But we get to do it over again and get to have fun again.

Dr. David Perlmutter: Absolutely.

Shawn Stevenson: So I'm just so excited because when we put this out, your book- the new revised edition is out and available, already number one, which is huge for a revised edition of a book that was already a massive success. So how are you feeling right now?

Dr. David Perlmutter: I'm feeling great. I mean, so we wrote 'Grain Brain'- here is the new book, by the way, I'll show you that's it. And we wrote 'Grain Brain' five years, and no doubt it was very disruptive.

I mean, we were telling people, "Hey, as a matter of fact, eating sugar, and gluten, and not exercising, and not paying attention to the quality of your sleep has a huge effect on your brain."

And did we ruffle feathers? You bet we did. Was there a lot of pushback in media? Absolutely there was.

And so- but nonetheless, that book worked, we got that book out to a lot of places. It's now published in thirty-four languages around the world, and I've over the past five years had the great opportunity to lecture in Moscow, and New Zealand, and you name it, all around the world.

And now, here we are five years later writing a book that's based on what has the science told us then about these ideas over the past five years?

And you know and I know that there's been an explosion of interest in ketogenic diet, for example. Lower carbs, eating more healthful fat.

Even the U.S. Government Dietary Advisory Committee said, "Hey, the problem isn't the dietary fat for your heart and your brain, it's the sugar."

I keep saying, "Well gosh, who knew that?"

Shawn Stevenson: Right.

Dr. David Perlmutter: But it's good to be able to write this book, and now visit data from 2017, 2018 that really says, "We can make a huge difference in the destiny of our brains."

And what is really interesting, Shawn, is that just last month- now two months ago, in the 'Journal of the American Medical Association' published online was a study by a Dr. Richard Kennedy that was what we call a meta-analysis; means that he looked at ten different studies to try to determine how effective are our Alzheimer's drugs?

These are drugs that are prescriptions given to Mom, or Dad, or whomever when they have Alzheimer's to the tune of close to a billion dollars of revenue for the drug makers each year.

And what Dr. Kennedy discovered and published again in the 'Journal of the American Medical Association' was not that these drugs don't work, but worse than that.

These drugs are associated with more rapid decline in brain function. Think of it. It's like giving a diabetes pill to somebody and it makes their blood sugar go up.

So I'm glad to be on your program and being able to talk about this, because I think this should have been on the evening news and the front page of the 'New York Times' that these drugs given to people, they put their faith in the pharmaceutical industry, are actually worsening the cognitive function of Mom or Dad.

And I say that because I went through this with my father, and the truth of the matter is what we choose to do, the types of things you talk about on your program in terms of exercise, cutting our carbs, eating more good fat, getting good sleep, and really engaging in good relationships with other people; all of these things go a long way to protecting and even enhancing the brain upon which we really, really depend.

Shawn Stevenson: Yeah. Man, that is so sobering to hear something like that because I just think we've been really barking up the wrong tree for a long time, and your- the first version-

And by the way, in the intro I talked about I was going from the first to the new one, back and forth, and just looking at the new data, which we're going to talk about today.

And it's so fascinating to see there's so much evidence, and also of course you've seen this in your own practice, that working with lifestyle changes like this can largely help to prevent and even support our brains after some damage has been done.

And it's such a good piece of news to talk about, and so I want to talk about some of those mechanisms behind the scenes going on there of course.

But can we just start off, like what are a couple of the new revelations that you've come across since writing this new revised edition?

Dr. David Perlmutter: I think that the biggest discovery has been the absolute pivotal role that inflammation is playing here.

You know, we've understood over the years, and it was in the original version, and now certainly amplified in the revised edition, that higher levels of inflammation chemicals in the body - we call them cytokines - are associated with worse brain destiny, worse brain function.

And now, though we didn't understand it before, now we know why because now we see the data that connects higher levels of inflammation with higher levels of the action of damaging chemicals called free radicals.

So with higher levels of inflammation, we kill off brain cells worse than alcohol. I mean, it's a big deal what inflammation does in the brain.

And let's roll it back a little bit to where is this inflammation coming from? By and large, the inflammation is coming from higher levels of blood sugar.

As your blood sugar rises, you change proteins in your body, you amplify immune reactions, and you have higher levels of inflammation.

Why is that important? It's important because you control your blood sugar oddly enough based upon what you eat. Eat sugar, your blood sugar is going to go up. No mystery there.

The other thing that was really a bit of a revelation over the past five years - and I actually wrote another book about it in the interim - is this incredible role of the gut and the gut bacteria in terms of controlling the set point of inflammation in the human body so that when we disturb our gut bacteria, ultimately we enhance inflammation.

And again, that is the cornerstone mechanism that makes a good brain go bad. Beyond that, we now know that inflammation - again, from diet, from changes in the gut bacteria - is strongly related to things like coronary artery disease, diabetes, and even cancer.

So the take home message here is everything we do from a therapeutic perspective and looking at how we conduct ourselves day to day should be targeted at reducing this mechanism of inflammation.

When we don't sleep enough, inflammation is increased. When we experience a lot of stress, we increase inflammation. When we gain body fat, especially around the

middle, we amplify inflammation. When we eat foods that are high in carbs, we get fatter, and we increase inflammation.

And what we now know moving forward for our next book incredibly is that higher levels of inflammation inhibit the way we can connect through our higher brain areas that allow us to be empathetic, and compassionate, and planning for the future, and locks us in when we have high levels of inflammation.

Locks us into more primitive brain areas that are involved with things like being narcissistic, self-centered, wanting immediate reward, and being impulsive.

So you know, in the grand scale, we see that this westernization of the global diet, which is more inflammatory, is changing how the brain works on the planetary level.

So we've got to call it out, and thanks to guys like you, we get these opportunities to be on these kinds of programs, and get this information out, and hope that people can leverage some of what we talk about.

Even though no one is going to go- or hardly anyone is going to go all in and do everything we talk about, but even cutting your carbs is a big step forward.

Shawn Stevenson: Yeah, it's all about exposure, you know? And I'm so grateful for that because this is a big part of my work is looking at- this is something we don't usually think about.

Food impacts how we relate to each other. It impacts how we relate to ourselves, and our experience of reality. And one of the things that you talk about in the book, and there's even more information on it, is this inflammation, gluten, and even depression connection. Right?

And this is just an absolute epidemic. Can we talk a little bit about that?

Dr. David Perlmutter: Well, let me first recapitulate what you just said because I don't want it to be lost, that food influences- these are your words.

Food influences how we can relate to each other. Think about that, that when we're on a diet that's nurturing our microbiome, that's nurturing our bodies, clearly we're in a situation metabolically to have better relationships with others.

That's what the research tells us, and that's a profound statement. We've got to understand that. We understand clearly that depression is an inflammatory condition.

Higher levels of these inflammatory chemicals correlate to the changes in the brain that relate to depression.

For example, from a mechanistic perspective, we know that inflammation reduces our body's ability to make the happy chemical serotonin.

We know that higher levels of inflammation antagonize the receptors in the brain where serotonin can do what it's supposed to do; in other words, keep us happy.

So you bet, what you said is quite true, that higher levels of inflammation brought on by eating crap - if I may, that's not a very scientific term but people know what that means - really relates to things like depression, seeing the world not through those colored glasses, but seeing the world as a threatening place.

And I really hope that as we move forward through the next few years, we can bring information to the table literally that'll help people see a brighter future, and I really think that's where we're going.

You know, as it relates to gluten, five years ago we were talking about how gluten can relate to brain issues; ADHD, autism, cognitive dysfunction, even movement disorders.

And you know, people heard that, and while we were simply quoting research from much of the research being done by Dr. Marios Hadjivassiliou in England, still the notion that gluten in the diet could have these effects I think was looked upon as being really out there, and that Dr. Perlmutter was really an outlier on this one.

We talked about this idea of non-celiac gluten sensitivity, meaning that you can be sensitive to gluten and not have celiac disease. And what does that do if you embrace that?

It means that we move away from the 1.4% of our population who has celiac disease and should stay away from gluten to a much bigger percentage.

And since 'Grain Brain' was first published- in fact in 2017, in other words just a couple of- last year plus a month, the 'Journal of the American Medical Association' published research from researchers at Harvard saying that non-celiac gluten sensitivity is in fact very, very real.

Quoting researchers like Dr. Alessio Fasano, for example, saying that you can be sensitive to gluten and not even have a gastrointestinal issue. It can affect your skin, your joints, and yes, even your brain.

So you know, that's a degree of validation that we were hoping for, that we have gotten, and we continue to get in terms of being supportive of the ideas that we should reduce gluten, we should lower our sugar consumption, and we should welcome good fats back to the table.

The other thing that we've really amplified this time around is the critical importance of dietary fiber. You know, it always goes undiscussed.

People say, "Well, maybe if I had more fiber in my diet, I might not be so constipated. I'll take some fiber." Well, it's much more important than that.

It's important because prebiotic fiber - a specific type of fiber - doesn't provide you any carb calories. It is carbohydrate, but it nurtures the gut bacteria that we just talked about.

Why is that important? Well, it's important because they play the pivotal role in regulating inflammation. So this choice to eat more dietary fiber really opens the door to reducing inflammation.

That has huge impact on the major causes of death on the globe at this time, according to the World Health Organization. They told us that the number one cause of death on planet Earth are the chronic degenerative conditions.

That means inflammation. So yeah, there's infectious disease, there's war, there's trauma, all of those things. The number one cause of death right now, Shawn, as you and I have this conversation, is inflammation basically.

And we can reduce it when we make the right lifestyle choices. That's again what we've tried to really get out there with this new version of 'Grain Brain.'

Shawn Stevenson: Yeah. Man, and it's done so well. And you know, something that's really fascinating is that- like you said, this information is becoming much more pervasive, much more easy to access today, but there's still a lot of work to be done.

There's still a lot of people that have no idea about this, and the connection between our gut and our brain. And is it- and you just mentioned a couple of researchers.

Was it 100% of folks tested had the zonulin secretion when they were consuming gluten? Can you talk a little bit about that?

Dr. David Perlmutter: That's right. It was published in the journal, 'Nutrients' in 2015, again by Dr. Fasano's team at Harvard.

So the consumption of gluten, and specifically part of it that they studied called gliadin, which makes up gluten, does activate this mechanism through zonulin - you're correct - that increases the leakiness or permeability of the gut, and that's a central player in the inflammation cascade.

So you're right. Did I know that when we published 'Grain Brain'? I didn't know it. We were suspicious, but now that's the information that has come out and is very supportive of the idea of reducing the gluten in your diet.

So again, you mentioned a point that I don't want to go over, we'll just pass by, and that is that so many people don't know this information.

Many Americans- most Americans really live by the notion that, 'Live my life, come what may, and there will be a pill to fix this or that.'

We have no pill to help your brain if you are diagnosed with Alzheimer's, and new literature shows that we sow the seeds for brain degeneration in our thirties, in our twenties, and that's really very powerful.

When we look at studies- there was a study that was published in the 'Journal of Neurology' - one of our most respected neurology journals - in 2017, and this is a study that looked at markers of inflammation, like we've been talking about, and looked at a group of people many, many years ago.

Followed them for twenty-four years, and what they found after twenty-four years was those individuals who at the beginning of the study twenty-four years ago had the highest level of inflammation in terms of their blood markers, had a dramatic increased risk of shrinkage of the brain and as you look at them today, poorer memory function when they were evaluated.

And one other recent- more recent study- no, actually I think it was published in 2008 in the 'Journal of Neurology,' followed a group of people for thirty-six years and found that at the very beginning of the study, what they did was one very exciting examination.

They measured the size of their belly. That's it. They measured, 'How big is your belly?' They followed this group of people for thirty-six years, and what did they find?

They found that those people who thirty-six years ago had the biggest bellies in the highest quarter or quartile of the biggest bellies had close to a threefold increased risk of developing Alzheimer's disease.

Now this means that having a big belly in your twenties and thirties becomes a powerful risk factor for when you get to be in your sixties and in your seventies.

And that said, it emphasizes to your demographic, your younger individuals who are wanting to know this stuff- because hey, you're going to be my age one of these days, and hopefully I'm making a lot of sense, so my brain is still working okay, and hopefully you're going to have put yourself in the position where you are resistant to the disease that killed my father, meaning that I have an increased risk of having that disease by virtue of my family history.

So the message for brain health is a message that needs to get out to your demographic, to people- the millennials, for example, who can make changes today.

You can't say, "Well, I'm going to be overweight, and eat all this junk today, and when it starts to matter in my fifties and sixties, then I'll start to take it to heart" - quite literally, that's a great pun because it affects your heart - "and then make these changes."

Because no, these are accumulative, and we really- as I mentioned, we sow seeds for brain degeneration very early in life.

Shawn Stevenson: Yeah. Man, that is so powerful. So everybody, your brain health that you're going to experience in your later years, in your senior years, starts today. It started really years ago, but when you know better, you do better, and now is the opportunity to really do something about this.

I want to talk about a couple of things that were highlighted in your book. And again, guys, get the revised edition. It is like absolute mastery. It's everything you need to know on the subject, updated with- we're talking like the most recent data is in here, so it's just really a great master class on the subject matter.

And so what I want to talk about is the upside, the good potential here in neuroplasticity you talk about, and also specifically I want to talk about BDNF; brain derived neurotropic factors.

So we can do something about this. We can prevent problems later, but also we can support some positive change right now. So let's talk about neuroplasticity and BDNF.

Dr. David Perlmutter: So we're in a place of discovery, and having discovered some things in the past couple of decades.

The idea that, for example, we have a second chance and can grow new brain cells. I would have probably been thrown out of medical school had I voiced that idea. I didn't have the idea back then, though I was starting to think about it, I have to say.

And the other idea is that our gene expression can be changed under our volition. We have the ability to change our gene expression, and these two things come together like a Reese's Peanut Butter Cup with chocolate and peanut butter.

Meaning that yes, we can change our gene expression, and we can change our gene expression to turn on the growth of new brain cells.

So both of those ideas were very much a kind of classic for we, as clinicians and researchers, not that long ago. Meaning we get a second chance.

Dr. Erickson at the University of Pittsburgh - Dr. Kirk Erickson - began to really make us aware about eight to ten years ago of how powerfully we can affect this type of change in gene expression and bring about dramatic growth of new brain cells exactly where we need them in the brain's memory center.

Who knew? We've known for quite some time that people who exercise have a lower risk of Alzheimer's disease. More exercise, less Alzheimer's disease.

Well, those are dots that are kind of far apart, and we wanted to fill in the middle part. Okay, why is it so? What is the mechanism that relates getting on the treadmill to improving my brain?

And Dr. Kirk Erickson, University of Pittsburgh, really helped us understand that because he showed that in a group of individuals who exercise aerobically for one year in comparison to a similar size group of individuals in their sixties, not young people - well, yeah I guess I should say young, I'm sixty-four - who just did stretching but nothing aerobic over the one year period of time.

Many things happened. First, they produced more of this chemical that you mentioned; BDNF - brain derived neurotropic factor - which is like growth hormone for brain cells.

So it turns on the growth of brand new brain cells, we call that neurogenesis. I love the sound of that word. And where it happens is in the brain's memory center, and what he also showed after the one year, he showed three things.

Number one, exercisers had higher levels of BDNF. Number two, on MRI scans, exercisers had a bigger memory center. And number three, on neuropsychological testing, exercisers had better memory.

Man oh man, why would you not do that? You do have to buy something, and here's the pitch. People need to know they've got to buy something; you've got to buy a new pair of sneakers. That's it.

You've got to get out and you have to pound the pavement, or swim in your pool, in which case don't wear your sneakers. Get on a treadmill, do elliptical machine, whatever you have to do to get your heart rate up for twenty minutes a day. That's all I'm - it's not all I'm asking, but that's a big player here.

What did he show? Those people who exercise become more resistant to developing Alzheimer's disease - dare I say again - a disease for which there is no treatment.

Now his research was followed up by a study in the 'Journal of the American Medical Association' that correlated higher levels of BDNF with lower risk for Alzheimer's in a perfect linear relationship.

So to focus on BDNF for a moment, you've got to do everything you can to have higher levels of BDNF. The most powerful thing you can do is exercise, but the herb turmeric for example is a powerful up-regulator of BDNF. Whole coffee fruit concentrate, now in the health food store, turns on BDNF.

We know that CBD - we're hearing so much about CBD these days - the non-psychoactive extract of marijuana turns on BDNF as well. What that means in the long term, we don't know, but at the very least, we want to exercise.

We know - and this is a very important bullet point - that inflammation reduces BDNF formation. So inflammation works against your ability to grow new brain cells.

It's probably why being a type two diabetic, higher blood sugar, higher inflammation is associated with as much as a fourfold increased risk for Alzheimer's disease.

By and large, type two diabetes is a lifestyle choice. It's a manifestation of a diet that is higher in sugar or a diet that has no sugar in it at all but a diet that's higher in artificial sweeteners.

Now that sounds ironic, doesn't it? But what the research is showing us, most of it coming from France, is that- and Israel, a diet higher in artificial sweeteners dramatically increases risk for diabetes.

With all these people having mild elevations of their blood sugar, suddenly drinking diet soft drinks, thinking they're doing the right thing, they've got to know that's the absolute worst thing that they can do. Diet drinks make you fat and increase the risk of diabetes.

Shawn Stevenson: That's insane. You know? It's just the marketing is so good with these diet sodas, and things like that, and understanding that this is- if we really just kind of step back and take a meta perspective about this stuff, it's soda. Like we know that.

And now we have more data showing that these things are in fact hurting our brains, and just to take a step back, you mentioned BDNF being like growth factor for our brains, and I've even heard you say it's kind of like Miracle Grow for our brains.

Low levels of BDNF have been heavily linked with dementia, we know this already, and this is what I want to talk about, is there was a study conducted at the University of California Los Angeles, published in the journal 'Neuroscience,' found that a diet high in added sugar reduces the production of BDNF. Alright?

So if we exercise, we can make more of this, and he just said buying some sneakers is the only thing you've got to buy to get this benefit.

However on the other side, a diet that's high in sugar and starch, gluten containing grains, this can be one of the things that really helps- or not helps, prevents this beautiful action to take place.

Dr. David Perlmutter: So true. I mean, I'll ask you, why do you suppose a diet high in sugar is related to decreased BDNF?

Shawn Stevenson: It's obviously inflammation.

Dr. David Perlmutter: Absolutely. Anything that increases inflammation will antagonize BDNF, and as I mentioned before, it will antagonize serotonin. Therefore a diet high in sugar, as the data shows, is associated with a higher risk for dementia and depression as well.

Guess what? Depression is characterized by lower levels of BDNF. That shouldn't come as a big surprise. And in fact, though I don't want to say it, but I'll say it anyways, many of the anti-depressant drugs - the SSRI anti-depressant drugs - actually increase BDNF.

So how they work for depression may have very little to do with how they increase the activity of serotonin, and they have more to do with BDNF.

Shawn Stevenson: Interesting. Very interesting. So I want to talk a little bit more about these artificial sweeteners, because that's the thing, even today there are- it's a big boom in artificial sweeteners, and also concentrations of natural sweeteners as well.

And I just want to be mindful of the use of those things. So we're going to talk about that right after this quick break. So sit tight, we'll be right back.

Alright, we're back and we're talking with the number one New York Times bestselling author, 'Grain Brain.' He's got the revised edition that's now available, Dr. David Perlmutter.

Before the break, I mentioned this big boom in artificial sweeteners, but also these 'natural' sweeteners. And for me, just on a logical level, just like the logical thought of, "You know what? I can continue to create all these different cells throughout my body throughout my lifetime, but my brain is exempt from that."

Like just even thinking about it logically, it just didn't make sense. And now he knows from medical school decades ago to today, 'Hey you know what? We just didn't know, and we can continue to produce cells.' And specifically he talked about the hippocampus, this memory center of the brain.

For me, even with these artificial and natural sweeteners, I just know that they are eliciting some bad things in our bodies in relationship to our brains, in relationship to our gut microbiome. So what's your opinion on this stuff overall?

Dr. David Perlmutter: I'd tell you that the artificial sweeteners, the non-caloric artificial sweeteners - aspartame, saccharin, aspartame being the largest in the world. Saccharin, though we don't use as much in America is still used globally, and even cyclamate are still used globally.

I think that while the use of these continues to increase, we have to look at these artificial sweeteners in terms of the threat that they pose to the human microbiome, and it is vast, as been proven in multiple studies. So there's no free ride.

There's an old commercial where instead of butter, somebody used margarine, and the commercial said, "Well, it's not nice to fool Mother Nature, and Mother Nature was very upset about that because she thought it was butter and it was actually margarine." So I use that in some of my lectures.

The point is that these artificial sweeteners are a powerful threat because of these changes in the microbiome to the extent that one researcher - and probably more now - in Amsterdam has actually been fecal transplants in diabetics who'd been consuming artificial sweeteners, and able to reverse much of the biomarkers of diabetes by putting normal bacteria back into their gut.

So we know that if you take the gut bacteria from people who have been consuming artificial sweeteners, and you transplant that into rodents that are normal, their blood sugars will go up. So it's really kind of pretty good science that makes us understand this.

The other issue for me is I really want people just to get away from thinking that they really want to have sweet all the time.

"So Dr. Perlmutter, if you're telling me I shouldn't have sugar, and I should stay away from the artificial sweeteners, then what should I have? Should I have the sugar alcohols like Xylitol? Should I have Stevia? Or Halo? What would be the best choice?"

And I think that these are better choices, but again, if we can get to a place of not really wanting to cater to our sweet tooth all the time, I think it reduces risk.

There's not a huge amount of data out yet that looks at sugar alcohols. Most of what is out indicates it doesn't really pose a significant threat.

There has been some research indicating that Xylitol in specific does change the bacteria at least of the mouth. That was done in Xylitol sweetened gum.

I think that Stevia is a pretty safe non-sugar based sweetener, so I think if people have to have something sweet. As a matter of fact, some of the recipes that we have put out that call for a sweetener, we use Stevia.

But by and large, it's really getting away from that and it's getting- I will mention one other change in the book is really beginning to understand that 'Grain Brain' was never the next iteration of the Atkins Diet; eating meat, and cheese, and dairy day in and day out, and eggs, and that's it.

No, it's really pretty much again focused on a plant-based diet. If you choose to have some meat as a protein, then it should be grass-fed beef or wild seafood or free range chicken, if that's your choice. Again, free range eggs, et cetera.

But mostly we want to emphasize good fat and good sources of dietary fiber, which is so reduced in the American population, certainly in terms of their dietary choices.

Shawn Stevenson: Yeah. When I think about the Atkins Diet, I always think about my friend back in the day when I was in college. His name was Floyd. Shout-out to Floyd if he happens to be listening.

But I went to his house, I'd always go over to his house to play *Madden*, and I came over one day, and you know he was one of those guys, he just was a bigger guy through his childhood, you know? And he was always trying to do different stuff to lose weight.

And he had these two crappy burger patties, like the frozen burger patties that come in the bulk box that you know is from like an angry cow. Like the cow definitely has the equivalent of depression and diabetes itself.

And so he's got a couple of those, and then some Kraft cheese slices melted on top, and that's all he's got on his plate.

And I'm just like, "What are you doing?" He was like, "It's Atkins, man." And he did lose weight, but his biomarkers, his blood pressure ended up going up after a certain amount of time, and eventually of course he fell off the diet.

But yeah, this is a much more intelligent approach where we're looking at- guess what? We're forgetting about this huge category called 'vegetables' that we can introduce here into the equation, and all the benefits that come along with that.

And you know, the indigestible fiber that help feed our microbiome, and all that good stuff as well.

Dr. David Perlmutter: Let me again, for the third time, indicate that you said something that I don't want your viewers to miss, and you said it in passing that these are beef patties that came from angry and depressed cows.

And why would they be angry and depressed? Because they're inflamed because they're eating grains, they're eating corn, and soy, and whatever else they're eating, and they're getting antibiotics damaging their microbiome.

So why would we be surprised that this is not a good source- there's no alchemy that happens, you know? You don't spin garbage into gold because you cycle it through a cow.

But yet- and I think that the damaging effects of that type of meat explains the research that shows people who eat that, who generally eat meat have higher risk for things like colorectal cancer.

I believe that. I think the China study made some very, very good points. But that doesn't look at grass-fed beef used as a condiment, not as the focal point of the meal.

So again, to get back to the notion of eating more plant-based and being very selective about your foods, and cutting your carbs except for your fiber, which is what we recommend for your brain, it's the right diet for weight loss.

I mean, over the past five years, we've allowed people to post on our site - www.DrPerlmutter.com - and the weight loss stories have been- and photographs have really been breathtaking.

When you simply change a diet getting back to what your body really- genetically what the human body has eaten for tens of thousands of years prior to agriculture, really remarkable changes happen.

People regain health, the genes begin to express themselves appropriately, and we reconnect. We reconnect to the powerfully good messages coming from our DNA, which we distance ourselves from when we send the wrong signals to our DNA by eating these not appropriate foods.

Shawn Stevenson: Yeah. You know, I want to- if we can, kind of circle back. Because something came to mind when we were talking a little bit about depression earlier, and even mentioning the depressed animals.

You know, there's this statement that I've been saying for probably a decade now that it's not just you are what you eat, it's you are what you eat ate as well, so having that as a moniker.

But I want to talk about mood in relationship to how gluten can potentially be affecting our mood. These gluteomorphins and I think they're called exorphins. Is that correct? Exorphins.

Dr. David Perlmutter: Exorphins.

Shawn Stevenson: Exorphins and a potential high. Listen, you know this, like in my clinical practice people would say, "Shawn, I'm ready to do anything, but just don't take my bread away. Don't take away my croissant."

Dr. David Perlmutter: How could you take bread away? Give us this day our daily bread. That's been part of the entire history of humanity. Right?

No. When was give us this day our daily bread written? I don't know when the Bible was written, but somewhere around 2,000 years ago.

Well, that is less than one tenth of 1% of the time that we've been on the planet. So to leverage that, I'm not being disparaging here, but I'm simply saying that for most of our time, for more than 99% of our time on this planet, we didn't eat bread, we didn't eat grain, we didn't have agriculture.

And it's interesting to note that the human brain, from when we were first defined as being humans about two million years ago, until about 14,000 years ago, when you look at the fossil record, the size of the human brain increased threefold.

Then beginning around 14,000 years ago until the present time, the size of the human brain has actually shrunken by about 10%. What happened 14,000 years ago?

Suddenly the diet shifted from animals and from vegetable sources, of fiber, and to a lesser extent, calories, to one that's based on carbohydrate derived from grain. That's what the agricultural revolution is all about.

And people are always extolling its virtues saying, "Oh, it allowed us to travel, to explore new lands, to build the Sistine Chapel, whatever. Everything is related to the fact that now we've got food."

Well, the reality is it is a sudden and incredibly dramatic shift in the signaling that we are sending to our DNA, and since that time, the brain has shrunken, our dentition, our teeth have become much less healthy, human bone structure has declined, and overall our health has declined.

People say, "Well, we live longer now. Well, when you factor in birth-related death, children dying in childbirth, mothers dying in childbirth, and trauma, that's true. The overall average was lower back then.

But to be sure, there were plenty of people living into their nineties and hundreds in our Paleolithic ancestry, number one.

Number two, a very important point as we just learned a month ago, that for the second time in the history of the United States of America, our life span has declined; annual determined for the year.

So that's scary business. So this notion that we're making these great strides in pharmaceutical or medical interventions is going to make us live longer and longer; it's not happening, and it cannot happen when we change the playing field as we have with respect to our lifestyle choices related to food, and sleep, and exercise.

Shawn Stevenson: Yeah. And it's not just that- it's a quality of life as well because we're not necessarily living longer, we're dying longer in a sense. You know? And the quality of life isn't there.

Dr. David Perlmutter: That's right. It's not just life span that we have to be looking at, it's health span. You know, are we able, if we get to live to be eighty or ninety, are we able to participate in life and do all the things that we still want to do?

And not think you want to cash out your chips when you're in your sixties because you know you're not going to make it, or at least not going to be able to get around.

So it takes a little bit of understanding, and it takes some planning, and understanding that the future will come. That is a function of the prefrontal cortex of the brain; a higher brain center, a gift that we have as human beings, that we can use this part of the brain - the prefrontal cortex - and not operate from the more primitive amygdala brain that says, "I'm going to eat this because it's sweet, I like sweet.

I'm going to respond to everything immediately, impulsively with anger. I'm going to get back at other people who may have said something about me."

That's the amygdala speaking. That makes the world a fearful place, and we want to cater to ourselves narcissistically immediate gratification in terms of our sweet tooth, in terms of buying whatever we want to buy, and buying for buying's sake off of Amazon, and really focusing only on ourselves in terms of our selfies and Instagram posts, as opposed to really gaining interaction with the prefrontal cortex that allows us to be more empathetic towards other people, more compassionate, and really plan for the future, and understand what will the consequences be of today's actions in terms of tomorrow's world?

And that has huge implications for me relating to you, for you relating to others, for me relating to my neighbors, for our country relating to other countries, and for us relating to the health of our planet.

So that's the kind of thing that we're being drawn from by social media, by all the targeted ads that appear remarkably on our Facebook feed, that really take us away from wanting to really connect to other people.

Social media is anything but social. It is a way of isolating ourselves from being connected to other people.

And so my son, Austin Perlmutter - also MD - and I have just submitted a manuscript for a new book that'll come out in January of 2020 called, 'Brain Wash.'

And it calls this stuff out that this is happening day in and day out, and we're being bombarded by these influences that don't have us in their interest, but have selling products in their interest to keep us away from connecting to others, and really making us think that we should connect with their products, or their website, or whatever it is, and that really works against us in terms of amplifying our connection to the prefrontal cortex.

Let me tell you one other thing that's really interesting we discovered, and that is that the pathway that connects us to the prefrontal cortex, this empathy center of the brain, is called the anterior cingulate.

That's not going to be on the quiz, but the point is that our ability to access our empathy center, our connectedness center, is inhibited by inflammation.

So that relates, as you said before presciently, that relates our diet to things like isolationism, and feelings of depression and loneliness.

Diet plays a huge role. A diet that reduces inflammation allows us to access that gift that we have, that part of our brain that lets us see the world through the viewpoint of another person.

And not to make a political statement, but I will, so yes to making a political statement. That's what we're missing in Washington, is dialogue, is reaching across and trying to understand what is that other person saying, and why might they be right even though it goes against everything I believe?

Take a step back, amplify your access to this part of your brain, and don't respond impulsively. "That person is totally wrong, out of hand, end of story." No.

"Let's talk about it. Let me understand where you're coming from on making that statement, on taking that position, and you may have some good points."

It's not that Democrats are wrong, or Republicans are wrong, or Independents are wrong all the time, or even part of the time.

It's that everybody- people are basically good, and they're defending their positions because they believe that's the good position to defend for whatever reason. It's time that we communicate, and well beyond Washington.

Shawn Stevenson: Yeah, so true, and now we've got data showing that our diets affect our ability to perspective take. I've talked about literally we've got studies now showing that even couples that are sleep deprived have far less ability to perspective take the next day, you know?

And you see greater incidents of arguing over silly things, all because of our lifestyle. And so yeah, that's- I can't wait for that to come out. But I want to circle back.

Dr. David Perlmutter: Let me tell you one other segue from what you just said. And also research indicating that one night of poor sleep translates the next day to higher risk of consuming higher sugar, higher carbohydrate food.

Shawn Stevenson: Right.

Dr. David Perlmutter: Which does what? Increases inflammation. And that compromises your ability to get a good night's sleep.

Shawn Stevenson: Right.

Dr. David Perlmutter: That becomes a vicious cycle. The name of the book is 'Brain Wash.'

Shawn Stevenson: Yup, and-

Dr. David Perlmutter: People can't Google it, there's nothing there yet.

Shawn Stevenson: But it will be, and we'll definitely have you back on.

Dr. David Perlmutter: It will be, you bet.

Shawn Stevenson: Stanford University researchers found that just, again, one night of sleep deprivation, leptin - it plummets, and this is that satiety hormone to keep you from making those decisions.

It's very difficult to stay away from the donuts when you're sleep deprived. I know that for myself personally. If there's ever a night I'm short on sleep, I'm waking up hungry the next day, I'm going to have a greater propensity to want, "You know what guys? You know what sounds good? Pancakes sound really good today."

You know? And it's there, but of course with the work you put in, and the research, and creating your own lifestyle, you don't fall victim to that stuff, but a lot of people do.

And so I want to talk about the mood aspect, because we didn't get to that when I asked you about the exorphins.

Dr. David Perlmutter: When you say 'pancakes,' I get an image of the short stack with maple syrup dripping over the edges, and a pat of butter on the top. The only thing good there for you is the pat of butter.

But that's my amygdala talking, and that is I'm looking for this dopamine surge. Other parts of the reward centers of the brain are talking as well, and it sounded good. I'm not going to lie, that sounds great.

I can imagine my fork going through every layer of that, and then finally eating it, and then there becomes this dissonance with me, and hopefully this is the kind of thing we want to develop with other people, that you disengage from that immediate need for satisfaction and say, "Wait a minute. Do I really want this?"

Now your prefrontal cortex is taking over and starting to rationalize and look at this decision in terms of its implications. Its implications are waking, poor sleep, poor decision making, increased risk of depression, increased risk of Alzheimer's, coronary artery disease, diabetes.

"Oh, okay maybe I won't have that. Maybe I'll skip breakfast and become a little bit more engaged in ketosis for the morning, or I will have something that has more protein, and fat, and doesn't have that level of carbohydrate."

Now let's talk about mood. So mood similarly is highly influenced by factors over which we have control. Much higher risk of things like depression in people who sleep poorly.

As mentioned, the diet plays a critical role in terms of amplifying inflammation, and really important is the work that relates the microbiome, or things going on in the gut, to changes in the mood.

A wonderful researcher out at UCLA, Dr. Emeran Mayer, has done a lot of work, actually published a book, I think I have it right here. No, I don't. I don't have it right here because I recently interviewed him.

But that said, we have a book coming out for physicians and researchers called, 'The Microbiome and the Brain.' We have twelve chapters written by Harvard researchers, UCLA, Oxford, et cetera, and really looking at this relationship that the gut bacteria to a significant degree are determining how you see the world.

Wow. You know, that's another one of those things had I been told that in medical school, I would have said, "No, this guy is drinking the Kool-Aid."

But that said, we know that our gut bacteria play an essential role in determining the set point of inflammation. Inflammation has a role to play in depression. The gut bacteria play a very pivotal role in the manufacturing of the neurochemistry; these neurotransmitters like dopamine, and serotonin, and norepinephrine, et cetera.

So at multiple levels, we know that diet therefore affects mood. And you know, we need to start looking at the idea that we might be able to leverage that from a therapeutic perspective.

We know that ketosis, for example, does some great things in the brain. There's research looking at getting on a ketogenic diet, and how that might be helpful for depression.

We know that is sure is helpful, for example, in Parkinson's, and is now a front and center central player in the approaches people are using to try to reverse Alzheimer's disease with a ketogenic diet.

So it's a brand new playing field, and there are definitely a lot of unanswered questions, and I'm grateful for that because we finally get to the point that I'm on your show, and we don't have any more to talk about, and it's all been said and done. That'll never happen, that's for sure.

Shawn Stevenson: Yeah, and exactly, there's always more. Always more. So we've talked about so many things today, but also even looking at how our diet overall is affecting our mood, but I want to talk about the good mood, Doc.

I want to talk about how that stack of pancakes makes us feel good temporarily, because I think that's something that can get overlooked.

It's just like, "Why do I feel this way?" I don't know about you, but it's something really interesting when you sit there in a carb coma and watch cartoons. You know what I'm saying?

So what's going on there? How can carbohydrates, specifically gluten-containing foods, affect our moods and make us feel this kind of high?

Dr. David Perlmutter: It's a very tenacious and powerful and self-rewarding mechanism, and the more you do it, the harder it is to break that mechanism.

When we satisfy that short-term urge, that desire to eat sweets, to gamble, to shop online mindlessly, for example, anything that people talk about in terms of addiction, we get this surge of a chemical called dopamine, and that ultimately stimulates certain areas of the brain that leads to the production of opiate like chemicals within the brain.

So in a very real sense, this type of activity is satisfying an opiate addiction. You mentioned this in passing a moment ago, and that is that wheat does the same thing.

Wheat contains chemicals that are addictive, that act in these centers of the brain, stimulate these receptors that are sensitive to things like morphine and other opiates.

So in a very real sense, the wheat plant has used this addictive quality to domesticate humans. So wheat was very effective in domesticating us for its own needs.

When I say that, recognize that growing wheat has spread to every corner of the globe where there's enough sunshine and rain, so it did a great job using humans to exploiting humans to get itself spread around the globe.

Shawn Stevenson: So you said wheat domesticated us. That's powerful.

Dr. David Perlmutter: Yeah. I mean we think, "Well, we domesticated the wheat plant." But what really happened was now there's wheat everywhere. Wheat did a heck of a job dominating all the other plants on the planet, becoming the number one food source on planet Earth. That's how it manipulated us.

So when again we satisfy our desire- and again, it's not just the carb satisfaction. It can be whatever the addiction may be. Maybe it is gambling, maybe it is mindlessly shopping, or whatever it might be.

We get that dopamine rush, and that dopamine rush ultimately stimulates parts of the brain that- there are a couple of the areas people want to look up these areas.

The nucleus accumbens is one, and the ventral tegmental area is another; these are pathways or centers along the pathway that ultimately stimulates the production of these endogenous morphine chemicals.

So in a very real sense, when we cater to our addictions or to our desires that bring us pleasure, we are really catering to a system that's allowing us to stimulate the insides of our skulls with morphine-like chemicals.

And that's why it's so hard not to do it. The more you do it through neuroplasticity, the more those pathways become hardened or engrained. What a great word, 'engrained.' Got the grain part.

But the more we choose not to do it, the easier it becomes to distance ourselves from that type of activity. It isn't easy to move away from that type of activity, but it gets easier with time.

So the plea is give it a shot. Stop eating those foods, stop engaging in those activities, and it will get better, and you'll develop much better relationship with the part of your brain that allows you to seek happiness over momentary pleasure.

Because what happens with pleasure is it needs to be rekindled and re-satisfied that day, later on, or the next day. Happiness and the prefrontal cortex, when that is

stimulated, we develop a sense of what is called contentment, which is the opposite of pleasure.

Pleasure means you never have enough. You need more. Contentment by its very definition means you're content with what you have. And contentment cannot be satisfied with things or things that can be acquired.

So once we develop this better connection with the prefrontal cortex, we become more content, and with that comes empathy towards other, comes compassion, and comes the sense of understanding long-term consequences of what we do today.

So in a very real sense, caving to the short stack and the maple syrup keeps us away from actual contentment and satisfies our immediate pleasure.

Shawn Stevenson: I love this. I love the direction that this conversation has gone today, and I just appreciate you. I appreciate your work, I appreciate your integrity, your dedication, and just having the audacity to put this information out there.

I know it just takes the courage, the heart of a lion to do that, and I've got a final question for you. I want to know what motivates you.

Like you said, you're sixty-four, what motivates you to continue- I just feel like you're just getting started, too. What motivates you to continue?

I know that your work has been very disruptive, and it's been something that challenges mainstream medicine. So what motivates you to continue doing this?

Dr. David Perlmutter: Exactly that. What motivates me is that there are so many unanswered questions, and I am- in the meaning part of life, I am really fixated on personal development, on gaining a higher level of understanding of myself to create a more compassionate being within.

The Dalai Lama said that if you want to be happy, practice compassion. If you want others to be happy, practice compassion.

So this is attainable, and it's attainable to some degree by everybody, and the mission is really to let people know that I am on this quest like everyone else to try to understand what it's all about.

I don't have all the answers, but I'm doing the best I can to explore those who have come before who've written inspirational works that are guides, and that's what being a human is all about.

It's to question, and to move the ball down the field, even if it's a small increment. And if that is characterized by being disruptive, then that is a very important badge of honor that I will wear.

Because the status quo isn't working, and we've got to disrupt the status quo to make it better, so that's the motivation.

Shawn Stevenson: Perfect. Perfect. Dr. Perlmutter, again, thank you so much for sharing your wisdom, and if you could, let everybody know where they could find your book, and also where they can get more information and connect with you online.

Dr. David Perlmutter: Sure. Well, the revised version of 'Grain Brain' is Amazon, Barnes & Noble, many small book retailers around, and so it's easy to find.

The following me would be simple. My website is, oddly enough, www.DrPerlmutter.com. We have a free newsletter that goes out every week with blogs from me and videos.

I have a YouTube channel which is called *The Empowering Neurologist*, and Instagram, Facebook, all that stuff as well. So there you go.

Shawn Stevenson: Perfect. Awesome, thank you again. I appreciate you.

Dr. David Perlmutter: My pleasure. Thank you, Shawn. I do appreciate it.

Shawn Stevenson: I can't wait for the next book, and we'll talk again soon. Thank you so much.

Dr. David Perlmutter: Okay, bye bye.

Shawn Stevenson: Everybody, thank you so much for tuning into this episode today. I hope you got a lot of value out of this. And I love Dr. Perlmutter because he's so practical as well.

He's got a ton of research, a ton of studies in the book, but it's very practical stuff. He doesn't recommend that there's some special supplement that everybody needs to buy, but we need to buy a new pair of sneakers. Right?

He snuck that in. First of all, I don't know if you call it sneakers, or tennis shoes, or kicks, or whatever. I don't know where sneakers actually even came from. It's kind of weird. Sneak up on people, I guess.

But so whether you're getting yourself some Skechers, some Nikes, whatever, get yourself a pair of shoes. You're going to produce more BDNF, this growth factor for your brain cells, for making new brain cells, specifically the hippocampus, and this is the part of your brain responsible for a lot of roles in memory, and learning, and all that good stuff.

So what's better than that, and what's more simple? Whatever kind of exercise you're doing, get yourself some new kicks. Or maybe you've got some, I don't know.

But I know it just popped in my head, when I was a kid, I had this dream of- because I didn't know. You know? We grew up, we didn't have a lot of money, but we went to Payless, right? I don't know, is Payless even around? Okay, so you may not look at me now, right?

But anyways, Payless, and there were these shoes that were called- they had the pro wings, but they had like- they were called athletics. Alright? It was the name of the shoe, was athletics, and they had the strap, right?

So it was like no time- I was against time. Like I knew how to tie my shoe, but why? You know? And there were some athletics, and I was begging my mom to get me these pro wings, these athletics from Payless. Right?

Super cheap anyways, and I got them. Right? And today, now I know, it just popped in my mind, they look like Jordan 1s. They look like the retro one, but they're the Payless version.

And we actually had to end up keeping them outside because they ended up stinking so bad. Alright? You mix that with a little kid getting outside and playing. They had to keep Shawn's shoes outside on the patio, okay?

I'm not proud of that, my feet do not stink anymore, my feet got nice. They're nice. But just be aware you get what you pay for, whatever kind of sneakers you've got to get, get yourself some sneakers, get to work. Alright? So get yourself some of that vitamin W, alright? Vitamin W - workout.

Also, I wanted to really press and get some information about like- he's talking about making these changes, but I don't want him to glance past the fact that it's not easy all the time.

Like you're saying to avoid gluten, avoid bread, and sandwiches, and pancakes, and the McMuffin. Huh? You want us to just do that?

Listen, I got out of the game before the McGriddle. I would imagine that that's just like what can you do? Right?

And so- but why is it so hard? Why is it so difficult? And he talked about this connection- how this can literally influence pathways that affect addiction basically.

I just read an article yesterday or this morning, but recently about the five most addictive substances in the world, and it's just like cocaine, and nicotine, alcohol was on the list, and I was like, "Where's sugar? Where's sugar?"

Most addictive substance, bar none. Alright?

We did a master class episode, we'll put that in the show notes, *The History of Sugar*. I promise you, alright? You're going to go on a journey. Alright?

Get your backpack on when you listen to the episode. Even if you're sitting at home on your couch, put a backpack on. Alright? We're going to take you through this adventure, and you're going to absolutely love the episode, and find out how this stuff all came to be.

But he mentioned it becomes easier, but I don't like that. I don't like that. I want to tell you this; yes indeed it does become easier, but we don't have to sacrifice joy and pleasure with this whole thing.

It's not a rip the band-aid off situation. I'm not the take from you guy, alright? And for me, it's about- it's so much easier and more graceful when you're enjoying yourself and you get the right nutrition, but it's also pleasurable eating experience. It just makes sense, right?

And that's what I want to advocate for you today, right? To add in more of that good stuff so that you are enjoying the process of being healthy.

You're not thinking about the fact that you are depriving yourself, or you can't do this, can't do that. Nobody wins with that long-term. Right?

Humans want to be free. We want to be able to live our life freely, to choose and do the things that we want, and you want to get to a place where you automatically are choosing health just because it feels so good and it's so pleasurable. Right?

Health equals health, happiness equals health, joy equals health. Suffering does not equal health, alright? So we need to get out of that mindset and really start to employ and push that button of joy, and pleasure, and happiness ultimately if we're going to win.

Alright so again, I hope you got a lot of value out of this episode. If you did, please share it out with your friends and family on social media, Twitter, Instagram, Facebook, all that good stuff.

You can tag me, I'm @ShawnModel. Let me know what you thought about the episode. Alright? I appreciate you so much.

We've got some powerhouse episodes coming up, so make sure to stay tuned. Alright? Take care, have an amazing day, and I'll talk with you soon.

And for more after the show, make sure to head over to www.TheModelHealthShow.com. That's where you can find all of the show notes,

you can find transcriptions, videos for each episode, and if you've got a comment you can leave me a comment there as well.

And please make sure to head over to iTunes and leave us a rating to let everybody know that the show is awesome, and I appreciate that so much.

And take care, I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.