Guest Introduction and Background

Well, I'm so excited to welcome our next guest. Doctor Austin Perlmutter is a board certified internal medicine physician and internationally recognized expert on how environmental influences affect our mental and brain health.

His research on lifestyle factors in depression have been featured and cited in peer reviewed literature, and he educate on the topic on top podcasts and in keynote presentations around the world.

He is a coauthor of The New York Times and international bestseller brainwash, which he wrote with his father, David Perlmutter, MD, and covers art for modern day brain health and the role of everything from diet to social media on our cognitive and mental state.

He's a frequent contributor to websites including Medpage, today, Doc, symmetry, Kevin, MD, Medium, and Psychology Today, and host the Get the Stuck Out podcast.

He currently serves as the senior director of science and clinical Innovation at Big Bold Health, where he is running an IRB approved pilot trial exploring the effects of polyphenols on epigenetic expression.

His overarching focus is in helping people find non-pharmaceutical strategies for getting stuckness out of their brains and bodies, using the best that science and nature has to offer.

Doctor Perlmutter, welcome. Thank you so much for having me. Well, I wasn't planning on starting here, but it just kinda hit me when I was reading your bio, you you followed in your father's footsteps in terms of brain health.

And you grew up around, a pretty recognizable, MD with regard to, functional integrative medicine and thinking about brain health in a new way. I'm just curious how that influenced you growing up and kind of landed you in the place you are today?

Right. Well, you're correct. And what some people may not know is that my grandfather, my dad's dad was a neurosurgeon. So we've kind of been in in brain function and brain study for a while now.

How Brain Health Shapes Behavior

For many years in my life, I decided I wanted to do something other than medicine. I majored in creative writing in college. I thought I wanted to be a young adult fiction writer and had I mean, there was something that always drew me back to science and to medicine.

And even as I went through the steps of becoming an MD and doing my internal medicine training, which is largely focused on conditions like heart disease, diabetes, managing chronic diseases, there was something that was just kind of tugging at the back of my mind, and it was this question of why is it that despite all of our knowledge, we keep making poor decisions?

Why is it despite knowing what we need to do to prevent diseases, we still find ourselves eating unhealthy food, not exercising, engaging in chronic stress without engaging in mindfulness to offset it.

And, you know, I obviously had the influence in my dad, but it really drew me back to the central point, which is that in order to understand what's going wrong with human health, we have to understand the human brain.

It's as simple as that. I appreciated that so many of these diseases that I had spent my time focusing on whether it's blood sugar dysregulation or high blood pressure, but these are really surrogates, meaning they're not the main goal.

The main goal is mental state, it's brain state. And the reason I say that is because at the end of the day, our ability to enjoy life, to actually show up, to appreciate the quality of our interactions with other people is a fundamental reflection of our brain state.

And once I understood this, it became almost impossible for me to look away. And, you know, I had this resource in my dad, who has been studying this for decades.

And so we got into a number of conversations that lasted many hours about what was going wrong with our brains, that was leading us to making poor decisions, that was keeping us trapped in poor mental health.

And that was kind of the genesis of the book we wrote brainwash, which came out back in 2020. But since that point, I've kind of redoubled my efforts to understand, as you said in the intro, what's keeping us stuck?

And so that is trying to appreciate what systems within the brain, be they metabolic, immune, neuro, plastic or otherwise are getting locked into these patterns of stuckness.

So what is it from our environment, from our genes, from all of these exposures? It's locking our brains into stuckness. And maybe more importantly, what can we do to get that stuckness out of our brains to set ourselves up not just for a lower risk of developing cognitive decline conditions like Alzheimer's disease and depression, but really optimizing our brain function for the here and now, changing our brain function moment to moment so we're more likely to feel good and make good decisions.

Well, this is really interesting. You know, this idea of of stuckness, right. When it comes to human beings in the brain, is no different to our whole system, which is that we are highly adaptable.

Right? Like, we we are so adaptive to our environment, which is remarkable. And yet at the same time, when our lifestyle, our behavior, our mental processes and our internal physiology gets find something that works, it kind of just stays in this groove.

Right? And and in generally speaking, that's generally what we're doing, right. We find something that works. Oftentimes it's for a limited period or a certain circumstance.

And yet we get locked in. Right. We get this like pattern lock and and then we can't figure out how to get out of it. Right. And I I've noticed this in behavior in my own behavior and particular but as well as the clients and the and the patients that I work with as well as in physiology and or biology, and it kind of has that same thing.

And we kind of have to figure out how to get unstuck. Right? So I'm just I'm just kind of noticing that as you're speaking about that, maybe you can, just tell me what you've noticed in that regard.

So you're absolutely right.

Habits, Neuroplasticity, and Stuckness

And where I'd start here is a really important understanding, which is your brain doesn't want you to be happy. That's not its goal. And what does it want?

It wants you to stay alive. It wants you not to be eaten by a shark. It wants you not to, you know, have to deal with some sort of a storm that's going to break down your house.

It wants to keep you alive. So what that translates into is that in the modern day, most of us aren't worrying about staying alive in the same way we would have in years gone past.

So that's kind of taken off the table. Doesn't mean there aren't still threats to our lives, but these tend to be threats that are over decades, right?

Chronic diseases, as opposed to the saber tooth cat or your cave bear or pick your poison from, you know, back in Paleolithic times, so your brain doesn't care if you're happy.

It cares if you've survived. But what it also wants to do is preserve energy. So it's an energy preserving mechanism. That means that as you do things time and time again, whether they're good for you or bad for you, your brain is going to say, okay, well, if I keep doing this, I'm going to basically offload this to my unconscious.

And this is the whole idea of habits. So as we do things time and time again, for example, brushing teeth or maybe driving to work, these things become less of a conscious experience and more of an unconscious experience.

Again, better or worse, doesn't matter. It could be the process of driving by that fast food restaurant, pulling in, getting that double cheeseburger.

Brain says, you keep doing this every day. We'll put this in the unconscious process. Similarly, if it's getting up to go on a two mile walk every day, brain says, we do this every day.

We'll make this an unconscious process. So over time, these unconscious processes start to build and build, and they become what we do in a given day.

The problem is in the modern day, that many of these things are directly counter to our being healthy. So if you go with the flow in modern society, you're going to be spending most of your day interacting with media.

That's not necessarily good or bad, but four hours a day is usually spend watching TV over two hours a day on our phones, especially on social media, where we're basically offloading what we're putting into our brains, to whatever's happening in our environment.

Similarly, when you think about the food that we eat, if you go with the flow and you're consuming the food that is available, it's going to be food with added sugar.

We know that added sugar is probably one of the most corrosive things for our overall health, whether it's brain health, cardiovascular health and even related to conditions like depression.

So if you go with the flow, if you're consuming the food that is readily available, that's food with added sugar, you get into a habit of consuming that every day.

And by and large, again, if you just go with that flow, you're going to do things that will set into place corrosive patterns in your thinking, in your actions that lead to long term detriments to your brain function.

And there's one other thing I want to mention here. So I mentioned habits. Habits I think are really important. But the overarching theme that kind of explains what we're talking about is a concept called neuro plasticity.

And so what is neuroplasticity? It's the idea that your brain is constantly changing as a reflection of what happens in your environment. And this is really fundamental because many people, myself included, kind of had this idea that when you are a baby, maybe a child, your brain is changing really quickly, which is absolutely true, but that by the time you become an adult, that's kind of done.

So your brain's locked into place. What is truly happening is that your brain is constantly changing each moment of every day. And the example I give is, if you know something right now that you didn't know yesterday, how does that happen?

It happens because your brain changed, your brain changed overnight while you were sleeping. It was rewiring itself. It's rewiring itself right now as you listen to this conversation.

So this is the idea of neuroplasticity, an incredibly powerful process that enables you to change your brain. It also enables the world around you to change your brain.

So the directionality of neuroplasticity turns out to be absolutely essential to our long term brain health.

Brain Inflammation and Immune Function

Are you wiring your brain for your health, or are you letting the world wire it for whatever the world wants, which is often not something that benefits our long term brain health?

Yeah, I love that. And this is such a key aspect to not only, avoiding things like Alzheimer's, dementia and neuro cognitive decline, but also, kind of reversing it.

Right? Like we can actually come out of these mild states of, of early dementia and recover with some of these things like neuroplasticity and new neuron growth.

Right? I mean, this is truly remarkable, what we're finding. And I want to see I would love for you to talk about these are other side of the coin too, which is neuroinflammation and sort of the brain unit, aspects, because that's kind of, in conflict, right?

When we have, all this neuroinflammation and the brain's immune system, the micro glial cells, or are just on fire, then it's kind of hard to, to rewire the brain and grow new neurons.

Right. You're absolutely right. And one of the most fascinating areas of research concern is exactly what you've described, which is the brain's immune system.

You know, for a long time and kind of still in certain, areas of conversation, it's been seen that the brain is separate from the body, that you have your brain, it's inside of the blood brain barrier.

And that what's happening in there is different from what's happening in, let's say, your gut or your heart, your bloodstream. One of the areas in which that has been presented.

And, you know, to cut to the chase, this is all very incorrect. We now know that the brain and the body are very closely connected. But one of the areas where that's been presented is the idea that what happens in the immune system, outside in the body doesn't influence the brain.

So what we understand is, first of all, that the brain has its own immune cells. And you brought up this term microglia microglial cells. They're about let's say 10% of our brain cells.

I mean that's that's pretty big by the way, right? I mean, it's a lot this is you know, when I learned this I was absolutely shocked. So when we're talking about the brain, we're always talking about neurons.

You know, neurons are definitely the star of the show. If you're going to open a book or listen to a podcast, it's your neurons do this, your neurons do that, and they're amazing.

Only 50% of the cells in your brain are neurons. So that's that was shocking to me, right? You think, oh, it's neurons. It's all about them. And certainly there's billions of neurons, but only half of the cells in your brain are neurons.

The other half are called glial cells. Glial comes from the word glue because originally it was just thought that these are cells that hold the neurons together.

They're basically just the glue that keeps things in place. What we now know is that these glial cells are incredibly important to our brain health. And so when you look at the types of glial cells, there's probably three or so that are worth knowing.

There's oligo dendro sites which are involved with myelination, which is kind of creating a protective sheath that also increases the velocity of signals over certain neurons.

White matter. Specifically, you have astrocytes. Astrocytes are involved in a number of things that's known maybe for being part of the blood brain barrier, but they also help to communicate as far as transferring signals between neurons.

And then you have these micro glial cells, which are literally immune cells within the brain. And even though micro glial cells are kind of the prototypical brain immune cells, I've been writing about this recently.

All of these, glial cells participate in the brain's immune function, not to mention the fact that neurons participate in brain immune function. They can respond to and even secrete some of these immune proteins.

So immunity in the brain is a huge deal. That's really important to understand. The other piece that I alluded to at the very start is that what happens in the body influences what happens in the brain.

So if you're having issues with your body's immune system that is influencing your brain function. And let me give one example of how significant that is.

So we kind of talked about this at the start. I'm experiencing a viral, infection. Or I had one in the last few days. And when it started I had a fever.

And what is a fever? It's basically inflammation in the body being detected by the brain. And the brain says, okay, in order to fight off this infection, let's raise the temperature.

It's it's a very intelligent mechanism. I mean, it's thought to help to potentially kill off the bug and also to help activate the immune system. But what does that tell you?

It tells you that the brain is sensitive to what happens in the bloodstream as it relates to something like inflammation. Now, I also experienced other symptoms.

My thinking was a little bit off. And as it turns out, for many people, if not most people, when they get sick, their thinking feels a little bit off.

They feel maybe a little bit withdrawn. They feel brain fog. They feel low energy. What is that? It is your brain sensitive to what is happening in your bloodstream as it relates to the immune system.

So here there are two big myths that I think we need to just blow up. One is that what happens in the body doesn't affect what happens in the brain. And two is that the brain isn't participating in immunity.

It's actually the exact opposite. Yeah, that's a big one, right? I mean, we hear now a lot about the immune system in the gut and for good reason. Right?

I mean, most of the immune cells are located in sort of the the GI tract area. And, and yet also we know the connection between the gut in the brain. But but again, I think what is a little underappreciated is the direct immune aspect of the brain itself and its relation to the entire body.

And so I guess let's say we have somebody that's not it doesn't have a known infection. Right? They're going throughout their day, but they have a constant state of sort of brain fog or, or maybe it's not.

So it's not every day, but it's often enough. Right? It's it's this sense of I can't think clearly every so often. Right. Or even maybe chronic fatigue.

But there's this sense of just something's wrong with my brain. Right? What what can we how do you go about investigating that situation? Because it could be so many things, right?

Yeah, it's a really good question. And the disclaimer is it's hard to know. Exactly. Right. Something like brain fog can be maybe a number of causes. And I wouldn't say that there's anyone who has nailed it and said, here is the

diagnostic algorithm that is going to fix brain fog.

But what I can say is staying on the subject of the immune system, you know, people don't appreciate that the immune system is incredibly metabolically active when it's activated.

Brain Fog, Stress, and Decision Making

So if a person has a significant immune issue, so let's say they're in the ICU, they're having fulminant sepsis, which is a huge activation of the immune system.

They might be burning 40% of their bodies energy just to power the immune system. So if a person is having low levels of inflammation, that might only be, let's say, 2% of your body's metabolic kind of energy going to to basically power that.

But that's still a lot. You know, you see these videos on YouTube where people are talking about compounding interest. They say, look, 2% a day is huge.

Well, so 2% of your energy being allocated to basically power your inflammation means that, number one, that's 2% that you can't use for whatever else you're trying to do with your day.

And two, that's actually energy that is going to basically make your life worse. So it's actually more than two. It's like a negative two. Right. That's really important because what we're saying here is that a low grade state of inflammation is actually incredibly costly as it relates to our overall energetic needs and use.

So that's that's a piece that I think we need to think about as it relates to brain fog. Part of that may have to do with energetics. So there's some research that's been done as far as mitochondria, whether there might be issues with mitochondria.

There's definitely a connection to potentially like latent viruses and other things. You mentioned chronic fatigue syndrome. There's a lot that's being looked at now as it relates to similarities between that and something like Long-Covid.

But what I can say is, if you look at, which I've tried to do, what are the inputs that are going to kind of converge upon your neurons that are going to relate to whether that neuron is in a state of good health, which then translates into good brain function.

And what are the inputs that may be detracting from it? You can go through and you can kind of characterize a couple of key pathways. One of those is going to be neuroinflammation.

One of those is going to be neuroplasticity, which we talked about some of those relate to neurotransmitters things like dopamine and serotonin. Some of those relate to hormones.

And I'd say the most, relevant of those conversations is probably the conversation around, the HPA axis or hypothalamic pituitary adrenal axis talking about stress, which we know chronic stress is toxic to the brain in a number of ways.

But what I try to get people to understand is that all of these pathways are interlocking. So just to make one connection there, neuroplasticity, which is, again, the brain's ability to rewire itself for that to occur in a healthy format, you actually need low levels of inflammation to trigger an increase in neuroplasticity.

Super interesting. Right? But at higher levels, that inflammation suppresses neuroplasticity. It actually lowers levels of a protein called brain derived neurotrophic factor.

So here you see this connection between inflammation and neuroplasticity. And if you wanted to go into neurotransmitters let's say you're interested in your serotonin levels.

Well actually high levels of inflammation in the brain block the production of serotonin in the brain. So it's all interwoven. But for me it comes down to is talking about look, this is interesting, but when can we measure it?

Can we say for sure this is what's going wrong in the brain? And maybe more importantly, what are the interventions that we can be talking about that don't necessitate people going on pharmaceuticals that allow them to, kind of mitigate some of these risks and potentially turn the tide, as you said, to improve brain function, to improve cognition.

And so it's talking about lifestyle factors, which is super exciting. Yeah, I talked to me about that. You know, I mean, obviously diet is a big one, right?

That we're now starting to talk about when it comes to brain health, in large part to people like your father and many others that are bringing a lot of light to this.

But there's a lot of other things, too, right? I mean, exercise is a huge one on brain. And and I think perhaps even more relevant now than ever before, it's all the stimuli and the inputs that we're being exposed to, right?

I mean, you and I are old enough to remember a time when cell phones in rule our life, right? And we weren't looking at computer screens all day, every day.

In fact, I remember getting my first computer, which was, you know, just this big boxy thing, and it wasn't this backlit, you know, monstrosity that I have right now.

So we have things that are that are garnering our attention in ways that never before. Right? So I don't think it's talked about all that much, but I've heard you talk about this sometimes on, on on how these, these external stimuli, and attention getters are affecting our brain health and our mental state.

Yeah. No, it's it's a really good point, a point that I try to bring up as often as I can is that when you're looking at the variables that are influencing your brain health, you need to think about the inputs that are coming in through kind of two major sources.

There's more. Right. But usually we think about what we're eating, what we're putting into our mouths as being a significant kind of influence on our brain function.

And it is so definitely the gut brain connection. Really important. Definitely the food you eat becomes the building blocks of your brain. The food you eat influences your immune system, but the data that you put in through your eyes and through your ears is a direct conduit to your brain health.

And coming back to what I said before, where we're spending upwards of 11 hours of our day interacting with media. Yeah, you know, for hours watching TV.

We have to be super careful about what the quality of that data is that's coming in through our eyes and our ears, because, again, this is a direct conduit into our central nervous system.

And specifically if we're consuming stressful content, which unfortunately has become the majority of what you'll see if you turn on the news or if you start, you know, trying to keep up with the media.

It's designed to be stressful. It's designed to incite your negativity bias, to get you concerned about everything that is going to influence your brain function.

There's some recent research which people probably don't need to hear me cite, which is showing that people on the whole are much stressed or much more stressed now than they were a couple of years ago, where we just have this rising tide of stress.

We feel polarized against the opposing political party. We feel stressed about pandemic. We feel stressed about

the fate of the planet. These are not trivial things.

What is perhaps concerning, though, is that we have a sense that the more content of this stressful form that we consume, the better we are, the more served we are as far as being informed.

And that's not really accurate, because most of the time what happens is we consume stressful content and then we don't do anything about it. Stress is actually just your body basically telling you that there is an unmet demand, right?

Is saying there is a thing that we are aware of, that we feel like we probably should do something about. So it's great if you do something about it. For example, you wake up in the middle of the night and you hear a drip right?

There's going to be some stress. Then you realize that, you know, it was just the sink. It wasn't actually a leak coming in through the ceiling. Right?

So the stress comes to tell your body, tell your brain, go take care of this thing because it could be a problem. What we have now, though, which is constantly perpetuated by the media we consume, is a stress that will never get relieved.

It's if it's not stressed about what's happening in your neighborhood. It's stress about what's happening internationally.

Media, Stress, and the Brain

It's stressing about what's happening at your grocery store. And again, it's all good if we're doing something about it, if it changes our behavior for the better.

But where we're at now is a scenario where that's not the goal. It's stress for the sake of stress. It's really stress for the sake of keeping your eyes on the screen.

And to tie the loop here a little bit tighter. So what is stress due to our brains in the short run? What stress does psychological stress I should say, is it it induces our brains to stay focused on the subject and that's a good thing.

So if there is something that is a danger, it makes sense that we would exclude everything happening in the periphery and get that tunnel vision to address the problem.

So if you're worried that there is a tiger in your camp, you're not going to be thinking about planting crops two weeks from now, you're going to say, let's deal with this tiger.

Great. But the way that we've set up stress now is that it stress that it's very vague, right? There's not something that we can do anything about. And so in the brain, what seems to happen is that it kind of takes aspects of our prefrontal cortex offline, which is our higher level thinking and has us react more.

So it has us kind of use parts of our brain that are a little bit more. I actually say primitive right there. They're there to keep us alive, but they're not super functional in modern society.

So it gets us to be more reactive. And what you can see actually, is this incredible research that's been done where primarily in animal models, chronic stress creates a dissociation between the prefrontal cortex and a part of the limbic system called the amygdala.

The amygdala is thought to be involved with emotional processing but also with reactivity. So the idea here is over time, chronic stress seems to have us move towards a disconnect between this higher level part of our brain and the more primitive part of our brain.

So we're maybe more reactive and chronically. What you see in these animal models is that stress creates this kind

of shrinking and atrophy of the neurons in the prefrontal cortex.

So that's really not a good thing, because that's also one of the things that we tend to see in brain degenerative diseases. Last thing I'll just mention on this I know we've been talking about stress for a bit, is that stress chronically appears to upregulate inflammation, which is a really interesting and perhaps paradoxical idea, because when you think about inflammation, you know, steroids can actually suppress inflammation.

But over time, chronic stress appears to increase inflammation. And that may create a feedforward cycle within the brain where not only are you stressed, but you're creating inflammation.

And inflammation may actually damage our decision making and lead us to getting more stress. So you can see how these things can be a problem. But the bottom line for this is pay attention to what comes in through your eyes and ears, because it's a huge conduit for stress in our daily lives that we may not be aware of.

Yeah. And I think I think we're saying it's huge. And again, I want to sort of make these links again, too, because, you know, even for those who don't watch TV and I think there's more and more of us now that are sort of turning off the TV.

But we go online, right? And especially I see this in social media, you see this, this emotional response to something happening on social media, and then you can see it.

It's like the limbic system starts to turn on the emotional reactivity. The prefrontal cortex shuts down and we get in this. You see this on Twitter and Facebook and you see this in the comments threads of all these things where people are going back and forth getting even more emotionally aroused and even more stressed.

Right? So it's this sort of vicious cycle that you see unfold right before your very eyes. And again, the fact that that's increasing stress, the HPA axis.

Right. As well as some shrinking the brain, I mean, literally just, you're losing brain cells, right? I mean, this is this is this is huge and especially in the prefrontal cortex.

Really not a good thing talking about the opposite side of this. Right? So one of the things that I'm trying to become more conscious of is, you know, even just again, media is everywhere now.

And it's not all stress induced negative stuff. Right. Especially once you become conscious of that. But yet still I'll catch myself listening to podcast more often.

In other words, I got something directly in my ears providing stimulus to my brain nonstop. Right? And a lot of these things are good things. I'm learning a lot.

I'm having fun with it. Right? But also, I think it's important to remember that the other side of the equation, the darkness, the silent right, the sleep right, all this other, the other side of the equation that probably for people like you and I and many people here that we'd like to engage with the world, we can sometimes forget about that stuff.

Right. I'm, I'm constantly catching myself sort of working too much and doing too much. And it's like, okay, I got to remember, meditate, you know, relax, take a break, go for a walk with nothing in my ears and just allow the silence and in the sounds of nature.

Right. So talk to me about the benefits of that. Right as the opposing force. What? We're talking totally. And I want to start with the disclaimer, which is I think there's a tendency to say, look, you know, if we would all just move out into the countryside and live off the land, then the world would be a better place.

And maybe it would, but I'm not going to do that right. I don't think you're going to do that. And probably most people listening and watching are not going to do that.

So let's be honest about it and say we want to be able to live in the modern world, to have access to amazing technologies, amazing, you know, health services, amazing abilities to connect with people across the planet.

I want to be able to do those things. On the flip side, I don't want to be compromised by the the darkness or the negative aspects of it. And so I think it is kind of on each of us to reset our kind of, balance points and to understand that you take the phone and social media as an example.

There are many people who could very easily be sucked in and spend a full day just scrolling on social media. It is designed to be as appealing as possible.

Now there's a lot of research being done as to whether social media is a net positive or negative. And I think people have kind of an a priori expectation of what they believe the answer to be.

People say, oh, social media is bad for the brain. It's not as clear. What is clear is that in certain populations and for people who use social media in a certain way, it's not good.

So there's unhealthy. That's exactly it. That's exactly it. And so I think it's really hard. You know, people want a blanket statement only go on your phone for 20 minutes a day.

Well, what if that 20 minutes is doing a mindfulness app? That's that's not really helpful. So we, my father and myself developed, kind of an acronym, mnemonic for how to approach digital media consumption.

It's not perfect, but I think it covers the majority of the basics. We call it the test of time. You want to apply the test of time. So very briefly the T is for time restricted.

That's going to be different for everyone. But if you can set, you know say I want to watch this TV show, it's 30 minutes long. Or let's say you're watching the new Game of Thrones and more like an hour long, right?

So you're going to say, before you do this thing, I'm going to allocate the hour for this activity. Time restricted. I ask for intentional meaning if you don't have a plan for what you're doing when you're engaging with modern media, it will make that plan for you.

So have your plan.

Digital Balance and Nature Exposure

If you want to sit and watch this movie or this TV show because you know you you're trying to decompress or also you just want to spend time with your loved one and kind of veg out on the couch.

Fantastic. If you want to go on Facebook to see how your second cousin, twice removed child is doing on the playground, fantastic. But if you don't have a plan, they will create that plan for you.

So I as for intentional admins for mindful, we'll talk about mindfulness in a moment in more detail. The way that we constructed this is to understand how you feel when you're interacting with this media.

So what I've seen in myself and other people is that we don't make the connection between how our minds have been kind of thrown out of whack by media consumption, and then the subsequent activities.

So let's say you get into an argument with your spouse and you're not really talking, and you go to sleep. Well, what was that about? Well, they had this opinion. I had that opinion. We were upset.

Okay. So you kind of close it out as far as that was the issue. But what you may not understand is that two hours prior, you were both sitting and watching this incredibly stressful news for a full hour, and it was actually that news that created the stress that then led to you were having the altercation.

So the mindfulness is being aware in the moment as you're consuming the media, whether that's social media, TV, computer or otherwise. Is this something that is improving my mental state and doesn't mean you can't watch something that is detrimental to your mental state in the moment? Maybe that's necessary.

You know, maybe you feel sad and that's okay. Or maybe you feel stressed, but that's going to lead you to do something more. But if it starts to get significant and you start feeling angry, that's when I would say that mindfulness one should really be something that you pay attention to.

And then E and the times E is for enriching. But the basic idea here being that you should come away from your media consumption with a net positive. It sounds very basic, but it's often missed, which is many times for myself.

Also, I will stop using social media or I'll turn off the TV and all of a sudden it's, you know, what? Did I really just do there? I feel kind of worse.

I was supposed to go outside, I'm supposed to call somebody. And that's basically allowing that media to take something from you. So it's not enriching.

So again, it's timely. And I think it's a very helpful mnemonic to just get people started. The other thing I wanted to mention though, which I know you mentioned earlier, is how do you balance all this stuff out, which is you're going to be doing this stuff to some extent.

What do you do to counter it? And one of the solutions that we talked about and brainwashed, and that I'm a huge fan of, is using the healing power of vitamin and which, no, you're not getting in your drugstore.

Vitamin Ed is nature exposure, and nature exposure is free. It is anti-stress. It's been linked to benefits to mental health, to immune health, and to even people living longer.

It isn't going to be, you know, studied like a pharmaceutical drug because no one's making money. If it turns out that going out into the woods, it's good for your overall health.

But what's been super interesting is to see that even 20 minutes of nature exposure once a week. This was a study done in Ann Arbor, Michigan, was significant enough to lower people's levels of salivary cortisol, and there just aren't a lot of interventions like that, which, again, are free, widely accessible and can help to counter what we are experiencing as a result of all of our, you know, kind of hectic lifestyles, which is an elevation in stress hormones.

So last thing I'll just say on that study, which is notable, this isn't sending people out into Yosemite. This is basically just an urban, center where there's people going into some little urban gardens.

So nature exposure is an awesome way to help mitigate some of the stressors of the modern world. And coming back to brain function. Nature exposure was recently shown to, help to kind of calm down the amygdala as far as some of these things that we were talking about before, maybe making us a little bit less reactive.

So there's a lot to be said about it. So, you know, this is one of the things I found in my life as to be increasingly bring awareness to all the little things that I'm doing and my mood and how I'm feeling each day.

Right. And and I don't have a diagnosable depression or anxiety. But of course, I do feel more depressed on some days and more anxious on other days. And so we we experience these emotions and mood swings right as part of our natural sort of, life.

Right. And it's interesting, as I notice, you know, when I get up and I go for a walk in the morning. Now, I live in San Diego, so I have the benefits of having, you know, pretty good weather most, most of the time, throughout the year.

But but nevertheless, when I get up and I go for a walk in the morning, I tend to feel better throughout the day. When I when I go to the gym or I do some exercise, I tend to feel better, in, in my day.

And I'm just curious, you know? I don't know if there's any research on this. And so I don't know if you have an answer for me here, but I'm just curious if I'm doing these things that is leading me to being in a good mood more often versus doing these other things.

That is kind of contributing to a worse mood and maybe depression and anxiety, apathy. These type of things. I'm just curious if I'm chronically in one state versus the other, do we is there any research showing the the benefits or the the drawbacks to brain health over time?

In other words, if I do these things and I'm in other words, it's not necessary. I'm not asking you about the lifestyles per se. I'm worried about the mood.

If I keep myself in a good mood, is that going to lead to better brain states over time versus if I'm chronically in, worse mood, so to speak? Is that via neurotransmitters or or otherwise doing something negative over the course of, of years of my life?

So it's an interesting question. It's a little bit of a chicken and egg question. Yeah. Because what we we know that, depression translates to a significantly higher risk of Alzheimer's disease.

We also know that people with Alzheimer's disease have a significantly higher risk for depression. We also know that, you know, when it comes to the molecular pathways that are linked here.

So exercise activates healthy, pathways in the brain. So to spending time with other people, so does eating healthy food. And so all of these things can either build towards something great or can detract from it.

If you're kind of going the opposite direction. Right. Not exercising, isolating yourself, eating unhealthy food. I think the the interesting part of this too, though, is first, the understanding that our our feeling about the day, our mood, our how we perceive our reality is, is variable, right?

It it changes day to day. I think there's this idea that, you know, who we are is something static, that we have this concrete identity and that, you know, things happen to us, but we just are this unchanging kind of blob that moves from day to day.

And that's not accurate. And the reason it's not accurate is because you are a reflection of your brain function, the structure, the function, the wiring connectivity, the activation states of those neurons.

And those are changed by your environment. Those are changed by the quality of the sleep that you bought the night before.

Mood, Sleep, and Long-Term Brain Health

And so to think about mood, yes, certainly there are conditions that would be like major depression, which is a diagnosable disorder where a person is several standard deviations, further along than what maybe we're describing, which is today is a good day.

Today is a bad day, but there's always variability. And so something that, we talk about again and brainwash is that if the goal is I mean, I guess we can all say let's set the goal to whatever we want.

But for the purposes of this conversation, let's say our goal is optimizing brain function over the life span. We want to have as many good brain days as we can over the course of our lives.

So that is going to be something that, you know, any single decision doesn't have a whole lot of bearing on. Right? So deciding to get good sleep tonight is a great decision.

But how much does that specific decision influence your chances of developing Alzheimer's 30 years from now? Unclear. Probably not a lot. You know, similarly, going for that third glass of Pinot noir at the Wine tasting, maybe

you're going to feel a little bit crummy that day, but is that going to be the biggest contributor to your risk for depression or dementia?

Probably not. However, if you come down to the level of how you make decisions in a given day, this is where it gets really interesting. Because if you consider that the majority of the risk factors that are preventable for a condition like Alzheimer's, and now we're learning many of these actually apply to mood disorders as well, are things like, you know, do you exercise, do you prioritize time with friends and family?

Do you get outside? Do you practice mindfulness? Now these are for many of us. These are just the question of did you make that decision in a given day?

Did you prioritize work watching TV, whatever, or did you prioritize all stuff? And so now what we can say from the neuroscience literature is that there are certain things that we can do that will bias our brains towards either making better choices or making worse choices.

So now instead of just saying, well, you made a decision in isolation, which was not to get a good night's sleep, what you can say is, okay, sure, the effect of that bad or good night's sleep on brain function may be trivial in the larger picture, but the effect of that decision on the next day is decisions which that influence the next day's decisions.

That becomes a lot less trivial, because then you're getting back to that compounding effect, where each of your decisions is building on and changing your brain to make it more likely that your brain is going to make better decisions in the future, or worse decisions in the future.

So when your brain is in a better spot, you're more likely to make good decisions. And when you make good decisions, you continue to wire your brain for being in a better spot and making more good decisions.

And that's why I think even though you can parse out and say individual things that we do aren't so important, it is the bigger picture of saying, how are you building a brain that is empowering you for a long term brain wellness, or building a brain that is going to be your enemy and constantly pulling you down and making it very hard for you to rise above and try to make those healthy lifestyle decisions.

Yeah. You know, one thing that kind of became clear as you were as you were saying this and throughout a discussion now is, is that it may be a good idea to look for the like, as you mentioned, a lot of different things, right?

We got exercise, food, we got relationships, nature. There's so many things that we've covered today, and it seems like maybe one of the better places to to start for each individual is to see which of those areas maybe is your biggest struggle.

Right. Because I remember see the as an example here. You know, I've got a two year old and he, he, he was a rough sleeper. He didn't he doesn't need a lot of sleep.

He's actually kind of like me in that, in that regard. But he would wake up a lot for the first year and a half of life and and, so I got poor sleep. I got really poor sleep for about a year and a half. Right.

And that's that's in contrast to my previous thing. I would get great sleep. I would go to bed at ten, I wake up at 5 or 6 and they're excellent. Right. Get really good deep sleep.

And so this was this was kind of a shock to me. And and so as that unfolded over the course of about a year and a half, on a fairly regular basis, I noticed I was making worse decisions when it came to food.

I was eating a lot more sugary, fatty, processed foods, even though I know better. Right? So, I mean, this is this is what's wild. And it speaks to your point.

Is it that one aspect of my life that is highly, influential in my brain health and decision making and, and habits

derailed a lot of the other aspects, right?

And 100% I wasn't exercising as much or and of course, that my mood was dysregulated. So everything started to become dysregulated because of this one thing.

Now, of course, we all know sleep is highly critical when it comes to good health and recovering from any chronic issues. But but we could say the same thing in other areas too, where if we're in chronic isolation and we're not around people that that we love and that we have connection with, that can derail us too.

Right? And, and, and create this sort of spiral of, of depression and emotional eating and then not going to not getting exercise. Right and staying inside.

So, you know, it's it seems like that we have these are key areas that can derail us, that then loop in all these other aspects and vice versa. When we start to make a positive change and we start to really influence this one area can can affect everything else.

So let me speak to that for a second, because you brought up a really important point, which is that, you know, we tend to look at our decision making as a function of basically two variables.

Well, maybe three, let's say willpower, motivation and knowledge. And so if we're talking about, you know, did you exercise today? Most of us know that we feel better or that we're healthier when we exercise.

So it's not a knowledge issue. And then where are we motivated to do it? Well, maybe you were, maybe you weren't. But really, did you have the willpower to follow through independence of that motivation?

And if you're still not exercising, then you know you had the knowledge, motivation and willpower are kind of seen as personality right issues or basically they're an intrinsic issue.

If you don't have them. Meaning that I can blame you, we say, or you have no one to blame but yourself. You just didn't care enough. You just didn't want it enough.

And what you're describing here as it relates to, you know, a scenario where you were sleep deprived and I can relate to this. In medical training, there's no scenario in which I'm getting a good amount of sleep.

So to assume that, you know, you just need to basically have enough willpower the next day, it kind of it negates all that we know about biology. And I don't say that lightly.

I mean, I think this is such an issue with the way that we approach behavior change is the idea that at some point you tell a person what they need to do, and if they don't do it, it's just a willpower issue.

Look, the brain is going to drive our behaviors, and if the brain doesn't get good sleep, that brain is going to make it really challenging to do healthy stuff.

And the pathways that are deactivated are activated by not getting good sleep, things like neuroplasticity and neuro immunity. Those are not the pathways, you know, that we're saying, oh, this is the biological format of willpower.

This is a lot more complicated than that. You know what you mentioned before as it relates to sleep deficit and the food choices, we know that sleep deficit seems to preferentially increase people's desire to eat certain types of food and eat more calories, but it doesn't necessarily translate into them making worse financial decisions.

So it's not just this universal. Well, their willpower went up. Their willpower went down. What we're talking about here is very nuanced brain biology.

And once we introduce that concept and say, look, here's how your decision making may change. If you exercise, here's how your decision making may change.

If you do or do not, it could sleep. Now all of a sudden you get to this very interesting, hopefully curiosity inducing puzzle of saying, how can I kind of set up my brain to be on my team, as opposed to the way we tend to look at it, which is, well, my brain either is or isn't participating, or people don't even say that it's me.

I just wasn't, you know, focused. I wasn't having enough adequate willpower. So I think that's really important. The other thing that you brought up, which I think is another really key aspect of this, is it's one thing to say here all the variables that a person should care about.

You need to exercise, sleep, you need to get nature exposure.

Practical Takeaways and Closing

All of us are going to struggle with at least one of those, and those are going to be dependent on where we are in life. You know, if you live in a family where everyone eats junk food and it's really hard to get healthy food in the house, maybe you just don't have access to healthy food.

You know, talking about incorporating four prebiotics into your day maybe doesn't make a ton of sense. Similarly, if you're having, a newborn, your sleep isn't going to be 100%.

But what I do think we can each do, and what I actually recommend that people start with is if you're trying to change your health, which many people are, many people listening and watching, maybe trying to change their health, go through and kind of chronicle a day and look at those instances in which you made decisions that you would afterwards say, that wasn't the healthiest choice.

I wish I did something different than that, not the scenarios in which it was impossible to make a healthier choice, but a scenario in which you maybe planned to go home and eat a salad, and instead you find yourself turning off and going through that drive through and eating fast food on the way home.

Because these are the scenarios where we can start to understand the variables that contributed to that decision. And it's really interesting what you get if you start blowing up this nonsense concept of willpower being the only variable, and you start layering in a little bit of the understanding of whether it's sleep or habit formation, is that you start to get those tools where you can say, look, this is a pattern that occurs as a result of this change in my brain.

So instead of saying, I'm going to force myself not to go to that drive through, you say, well, why am I making the turn into that drive through? In the first place?

Is it because I'm trying to offset the stress that is coming from work? Is it because every time I drive by that drive through, my habit loop is activated?

I'm not even consciously pulling in there. You can start to actually get insights into the way that your brain works, and it takes you away from this blame mentality, and it gets you to a place of actually finding solutions.

Well, I mean, what you're saying really is powerful, and I hope this is kind of the big takeaway of this interview because again, you provided a lot of information that I think is is very valuable, but it really comes down to the practical aspects of how we apply these things.

Right. And and again, what you're saying is like, we can take responsibility for our actions, right? And we can identify them. And also we don't have to blame ourselves and beat ourselves up too.

Right. And going back to my sleep example, I can accept responsibility that I was the one making choices to eat the certain foods and and eat more of them.

And there's a recognition of like, okay, there's actually biology at work here too, that it's I don't have to beat myself up over it. And so now the beautiful part is we can start to make good decisions.

And all of a sudden, in my case, if I were to start getting good sleep again, all my other decisions become easier. All the things that I want to do become easier. And that's a really, I mean, that's a really positive message, right?

Like to tell somebody, hey, if actually you just start going and exercising a little bit, or you get up and go out in nature, all the other things that you're wanting to do to improve your brain health and overall health, they might become easier because because there's a positive sort of effect here and a compounding effect.

So, doctor has implemented this has been fantastic. Again, I think this is really powerful. I hope people get a ton out of this, interview. Tell people where they can find more of your work.

Yeah. Easiest part to find me is probably my website, Austin perlmutter.com. Beautiful. Well, thank you so much for joining us. Despite being a little under the weather, really appreciate your, your contribution here and all the work that you're doing.

Great. Thanks for having me.