Introduction to Neuroinflammation

Welcome back to the Heal Your Brain Masterclass. I'm your host. Doctor David Jockers is here. I've got the honor of interviewing Doctor Austin Perlmutter.

And we're talking all about neuroinflammation, how inflammation affects the brain and what you can do about it today. Doctor Austin Perlmutter is a board certified internal medicine physician, New York Times bestselling author, published researcher, and international educator.

He is a co-producer on the Science of Prevention series and host of The Better Brain Blueprint series. You can find his website, austinperlmutter.com.

And again today we're talking about neuroinflammation, how inflammation affects the brain and what to do about it. So in particular we're going to go into this idea of neuroinflammation and how it impacts our life.

We're going to talk about common signs and symptoms of brain inflammation. We're also going to talk about key lifestyle factors that are driving neuroinflammation and how to prevent reverse neuroinflammation for good.

So you can think sharply and clearly and live your best life. So you guys are in for a treat. Let's go into the interview with Doctor Austin Perlmutter.

Doctor Austin Perlmutter, great to connect with you here. And we're talking about neuroinflammation. Really hot topic now and really important topic. So let's let's go ahead and break that down.

I would say this is one of the most important topics in the world. And obviously I'm biased. But let me explain my positioning. If you consider the things that make life worth living, how you think, how you act, and how you feel.

We've historically looked at these as reflections of psychological state. We'd say, oh, that person's feeling happy, feeling sad. That person is behaving well is behaving in a strange manner.

We'd say that these are things that are constructs related to a person's personality. And now what we're learning is that the immune system, specifically inflammation in the brain, is a major driver of how we think and how we act and how we feel.

And specifically, if we have higher levels of brain inflammation, we are at higher risk for developing depression, higher risk for developing conditions like PTSD, higher risk for developing conditions like Alzheimer's, dementia.

And maybe the most important part of this entire thing is that when we have higher levels of inflammation, there's an association with more violent, aggressive behavior.

So starting to unpack this and understand that inflammation in your brain is so much more than just brain fog. And low mood. Yes, it can be those things, but this is something everybody should care about.

Yeah, absolutely. I mean, it's a really big thing that most of us have seen people that are dealing with neuro inflammatory conditions. We've been around it.

What are some of the major signs and symptoms that clue people in that they may be experiencing neuroinflammation or a family member maybe. Yeah. And I'd like to start by saying, you know, even now when we think about kind of how conventional medicine is practiced, inflammation in the brain is kind of limited to a couple of conditions.

Signs and Symptoms of Brain Inflammation

So we would think about inflammation in the brain. If somebody has an infection or really severe infection. Sometimes we would think about inflammation in the brain.

If somebody has an autoimmune disease, multiple sclerosis, lupus, these are conditions that can alter our brains in most people. And most of the time, what inflammation in the brain may show up, as is low mood, social withdrawal, some brain fog, trouble thinking.

And that's really the first signal we should get that we should be paying attention to our immune state. One of the examples I like to give is to think back to the last time you were sick.

So that might have been a flu or a cold, some sort of a virus. Think about how your brain felt and if you're like most people like me, you probably felt a little bit out of it.

You weren't excited about seeing friends and family. You weren't excited about needing to do work. You probably just wanted to hang out in bed. And maybe you're thinking was a little bit foggy.

And that actually has a definition. It's called sickness behavior, well characterized in both animals and in people. This is the result of inflammation in your body getting into your brain and telling your brain, let's not do things the usual way.

Why that is so important is if you think about what it does. Inflammation tells your brain to withdraw from other people to experience low mood, potentially even to be more aggressive towards other people.

And then we think about the fact that people across the planet are experiencing more and more an inflammatory lifestyle through the food we eat, the stress we experience, the sleep we don't get through sedentary behavior, you can start to understand why people are feeling so crummy.

So much of the time. So again, there's a spectrum of things that we might experience that could tell us that inflammation is a problem, ranging from mood issues to cognitive issues to everything in between.

Yeah, it's important to understand. I know, you know, when I was originally going through, college, I was told, for example, depression was a serotonin imbalance, right?

Or a deficit or a neurotransmitter imbalance. A lot of people are told this, but the new research is showing some neuro inflammatory condition. And so let's go into kind of some of these conditions, anxiety things that a lot of people are dealing with.

Anxiety is on the rise. Depression a lot of these mood disorders, brain fog a lot of people are complaining a brain fog. How is neuroinflammation impacting or how is neuroinflammation at the root like how does that contribute to those.

Right. Well, many people are aware that when they have inflammation in their body, they can experience it as pain and dysfunction. So if you have an inflamed joint, it's maybe hard to bend that joint.

It's red, swollen, it's painful. That's what inflammation looks like in the body. Maybe you have a rash on your skin. You can look at the redness and say, oh, there's some inflammation here.

Maybe you have gut issues. You can say, well, maybe there's some inflammation in my belly, but it's different in the brain because the brain, the tissue itself doesn't really have all those pain receptors.

So thinking about what inflammation actually looks like in the brain, you might not experience it or you will not experience it the way you would in the body.

What's really interesting to look at is, as you've alluded to, all of these conditions that historically we say, well, something just goes wrong in the brain, whether it's Alzheimer's disease or depression, you know, it's easy to pin those on a singular pathway in the case of Alzheimer's and say, oh, well, amyloid plaque is the issue.

Well, that's been challenged in the case of depression. We say, well, serotonin, that's the issue that has been challenged. And importantly, the drugs that are supposed to target those pathways.

How Inflammation Drives Mood and Cognitive Disorders

In the case of Alzheimer's, by removing amyloid plaque in the case of depression, by targeting these serotonin receptors are really nowhere near as effective as they should be.

If that was the major pathway. So at the first part of this, we're saying, well, the standard explanations don't make enough sense. So we need to look at other ways of explaining these conditions.

Then you start to look at what does make more sense. And I do want to be clear. It's not that inflammation explains everything, but it is a big part of the story.

And one of the things that I've learned in the last little bit, it's not as though you have inflammation here and then metabolic function over here, and they don't talk to each other.

The immune system, the endocrine system, constantly speaking to each other. We know that when there's inflammation, it changes the way that our cells metabolize and vice versa.

And so when you start layering in this information, we see one that people around the world are experiencing higher levels of inflammatory diseases. So that includes brain diseases.

But it actually includes 7 to 8 of the top ten diseases that lead to death and disability around the world. These are chronic diseases for which there is a significant inflammatory component.

Then we say, as it relates to the brain, do we have data suggesting that higher levels of inflammation predispose people to brain diseases? And we do we know that people who have higher levels of inflammation, as measured in their bloodstream, are at a higher risk for developing depression and have more trouble getting therapeutic resolution with drugs like SSRI is.

There's some really interesting work now being done to look at whether anti-inflammatory medications could be used for depression. And I'll just throw in a little curveball here.

There's actually a question as to whether psychedelics, a molecule that has historically been looked at as a serotonin based molecule, may work in part by lowering inflammation in the brain.

And now they're asking whether psychedelics may actually be something we could consider for conditions like autoimmunity and for Alzheimer's for those same reasons.

On that topic, when we look at Alzheimer's disease, we see not only that people who have diseases associated with inflammation being at higher risk for developing depression, but people who just have higher levels of inflammation are at higher risk of dementia.

I think I said depression, so people who have higher levels of inflammation, a higher risk for dementia. So it's diseases like diabetes and cardiovascular disease.

It's obesity and metabolic dysfunction. These are conditions associated with higher levels of inflammation in the body that are linked to concern for inflammation in the brain and diseases like Alzheimer's and depression, which are correlated with inflammation in the body.

Now that's kind of higher level association data. What's gotten really interesting in the last ten or so years is we've started to see data looking at imaging scans of people's brains to see whether there's evidence for immune activation.

And this is something that I definitely didn't learn nearly enough about in my medical training. But the brain itself has its own immune system. So it has these cells.

They're called micro level cells, and they are about 20 billion of them in your brain. You only have about 80 billion neurons. So that's a lot of micro glial cells.

These are immune cells that respond to you. And generate inflammation in the brain. And some of these new imaging tests, these MRI's and Pet tests can actually look for activation of these micro glial cells.

And there's evidence that they're activated in conditions that range from mental health issues to traumatic issues to cognitive disturbances like Alzheimer's disease.

So really the sum total of this, what we're saying here is that to understand both what is going wrong in the brain and to understand our best opportunities, not just to prevent brain diseases like depression and Alzheimer's, but to optimize brain function.

Right now, we need to be talking about inflammation because there's so much we can do to decrease our risk for brain inflammation problems. Yeah, really.

Well put. And when we think about inflammation there's an emerging amount, you know, huge amount of research. In fact, you know I know your father wrote a book called I Can't Remember Brain Maker. Right.

All about the gut gut microbiome and how that impacts inflammation, how that impacts brain health. In fact, they call the gut the second brain. And there's a lot of research about how the gut microbiome and how intestinal issues, right, a leaky gut intestinal permeability, how that impacts brain function.

Let's talk more about that. Sure. I think it's such a fascinating topic. And if I were going to guess where we'll be in ten, 20 years, it's probably that we'll be able to explain a lot of human behavior by understanding the microbiome, that we are probably less in control than we think, and the microbes are probably more in control than we think.

And there are a number of reasons why I believe that is the case. So just from kind of a statistical perspective, we've got roughly the same number of microbes specifically bacteria, living on and in us as we do our own selves.

I think the latest estimate is around 39 trillion, microbes and 39 trillion, of our own cells. And then when you expand that, I mean, there's actually a virus which is ten times more.

We're just starting to learn about this when it comes to the gut, the majority of the research has been done on these bacteria. And so when you think about the gut, you know, it's this tube that runs from the top to the bottom.

The majority of bacteria are concentrated in the large intestine or the colon. That's where the environment is best for them. And we know that this is also a part of the gut, where there are a lot of immune cells, where there are a lot of kind of receptors to learn from what is happening in this gut microbiome, all these bacteria hanging out in there.

So these gut microbes, these bacteria that live in the GI tract have a ton of different roles, many of which directly relate to our brains. One of the roles that we're now understanding maybe essential to both understanding risk for disease and ways to treat disease, is the metabolites of microbes.

The Gut-Brain Connection

So let's break that down. When we have bacteria that live in our gut, they need to eat like everything else. And

what they have access to to eat is either the food that we consume or some of them actually eat a part of our gut lining called mucin, which sounds a little bit gross. It's actually a good thing.

One of the bacteria that actually eats this got lining helps to regenerate the gut lining. It's called Ackerman Mucin Ofelia because it likes to eat that mucus that use in layer.

So when bacteria eat whatever they're eating, they produce molecules from that. One class of molecules that they produce are called short chain fatty acids.

And now we know that these short chain fatty acids have a number of effects on our physiology. And one of these that have been suggested are effects both on the permeability of the blood brain barrier.

So they can actually help to protect our brain, our barrier from what's happening in the bloodstream, which is a good thing. We don't want a leaky blood brain barrier, just like we don't want a leaky gut.

But also these short chain fatty acids can, influence neuronal health. The health of the brain cells can help to promote neuroplasticity, the rewiring of our brain, and can actually change what's called epigenetic regulation, which is a complicated idea.

The bottom line being, they may change the way we use our DNA. So here we have a system where the food that we eat changes what bacteria in our gut do, and what bacteria in our gut produce changes our brains.

That's just one pathway involved. And there are several others we can talk about, but realizing here that this is a constant communication system where our brains are sending signals to our gut, to the microbiome, to the immune system, and our gut is sending signals to our brain by way of these molecules, like short chain fatty acids, by way of other molecules that wind up in our bloodstream by way of the vagus nerve that connects the gut to the brain, there's really just no way to separate these two parts of the body, even though for a long time they were seen as so far away, they couldn't possibly have anything to do with each other.

Yeah, really. Well said. And when we have imbalances in our gut bacteria, we're like a condition called dysbiosis. If we have overgrowth of certain types of bacteria, you know, I always say bad bacteria or bad bad microbes in our system, they eat nutrients and poop out toxins and then good bacteria eat toxins and poop out, nutrients, right.

And metabolites and post biotics that help bring down inflammation. So a lot of it has to do with the the balance of our microbiome. And then, of course, what we're feeding that that the microbiome as well.

So what should we do. Like as far as helping to support the gut. What are some of your top tips here. Yeah, with anything I say I will always say if you're really struggling, you know, go and see a practitioner.

These things can get really complicated. I think you and I both have seen patients that have been really, messed up from their gut, and they need more than just a couple of lifestyle modifications.

But I do think for most people and most of the time, the strategies that we're going to talk about here are going to be incredibly useful. By and large, what we find across the board is the people who do best are the people who do the boring, repetitive stuff day in and day out.

And what that means is deviating from what the average person does and doing what our bodies are used to doing, what we kind of have been doing for thousands and thousands of years as it relates to the gut.

As we've said, you have all of these bacteria living in there and there was this idea, a very popular idea for a long time, which was that bacteria were bad.

And I remember in elementary school we had this photo of the germs in the bathroom. There are these scary monsters. You know, we don't want bacteria because they're going to cause disease.

The reality is we need these bacteria, but only the good ones and only in the right balance. So there are steps that we can and should be taking each day to feed and protect the healthy microbes in our gut.

What are those things? Well, the first thing is fiber. And I know people have different perspectives on this. Not everybody can tolerate getting a couple of grams of fiber a day.

Again, these are the scenarios where you really want to talk to a practitioner. You might have some gut stuff that requires more than just a dietary modification, but by and large, we're talking about eating real plant based foods that contain this fiber in the matrix.

And I don't mean that in the, you know, Keanu Reeves model. I'm saying there is a matrix of food. When you eat real food, you get access to that matrix.

It's different from taking it in a supplement form. And I really think that's where most people should start. Now you can take a fiber fiber supplement.

I'm not opposed to that at all, but by and large, the research suggests it's eating real food that is most beneficial. And fiber is just one element of what's good for your gut that you will find in real food.

The other thing that I'm a huge fan of are a class of molecules called polyphenols. And so these are named based on their chemical structure. They have kind of these, carbon rings with these, hydroxide groups for anybody who's nerdy out there who wants to look it up.

These are molecules that give plants their colors. They're actually molecules that protect plants from harsh environmental exposures. So they kind of act as a plant sunblock, and they help to fend off microbes in their own environment.

And research shows that people who eat diet richer in these polyphenols tend to have better overall health and better gut health. Unfortunately, we've kind of lost a lot of what is valuable in the polyphenol family by moving towards ultra processed food.

So I think one of the top sources of polyphenols now in the human diet is actually coffee, which I'm not opposed to. I love coffee, but the issue is that when people are consuming these molecules, along with a ton of added sugar and preservatives, you're kind of at the very least, you're coming out neutral.

But probably you're coming out in a bad spot for gut health, because it turns out that when we eat foods that contain a lot of added sugars, we're actually changing the relative balance of the immune cells and the microbes in our gut, and that can lead to long term concerns.

So to go back to some of these dietary components, really what we're talking about here is eating a diversity of plant foods that have been minimally processed and specifically colorful plant based foods.

Another great way to get these polyphenols, which what's interesting about them is not only do they act kind of as food for microbes, but there's some pre-clinical data showing that they preferentially increase the populations of healthy microbes and decrease the populations of unhealthy microbes.

Diet Strategies for Gut and Brain Health

So it's kind of a selective food for healthy microbes, polyphenols, as I said, colorful plants. But also they're found in and spices and herbs. These are some of the most concentrated sources of polyphenol.

So we've talked about things like turmeric for a while. A curcumin is a great source of antioxidants. That's really a conversation about polyphenols. And I think going beyond antioxidants and saying this is a gut specific intervention is where we should go.

So spices and herbs, virgin olive oil to extra virgin olive oil is is known for a number of reasons to be protective for the brain. It may help to preserve the lining of the blood brain barrier.

And it's rich in polyphenols. So another great example. And then the last ones I'll just bring up here two things to think about. So one is your beverages.

Coffee and wine. Yes. They have polyphenols in my personal opinion. Right now I would say you're not getting a net benefit from drinking alcohol because alcohol is in many ways neurotoxic and increases inflammation.

So if your goal is polyphenols, don't convince yourself that there was a trial in the red wine is going to outweigh the, alcohol consumption. Coffee's a great one.

There's a plant that I've been involved with called Himalayan tartrate buckwheat, which is just an example of one of the things that I think is really important, which is substituting out the low nutrient versions of everyday food, like white bread, for example, or white rice that have very little polyphenol, and replacing them with those forms that do.

And a nice way to test whether your food has a high polyphenol content is actually is it bitter? Because bitter foods tend to be bitter because of the polyphenol content molecules like quercetin and rooting that give it that so bland food usually lower in polyphenols a little bit better food.

Coffee being another good example, you're actually tasting that polyphenol content. So from a dietary perspective, just to kind of recap here, diversity of plant based foods rich in fiber, rich in polyphenols, decrease exposure to sugars, specifically added sugars.

And I'll expand this by saying, by and large, artificial sugars are not a good call. We don't have a ton of human data, but the animal research would suggest that artificial sugars, first of all, don't provide much of a benefit as far as weight loss, and also may disrupt the gut microbiome.

So I highly recommend you minimize those. Last thing I'll just say on this front, I know it's not accessible to everyone, but when you can, I actually choose to eat organic food.

One of the reasons for that is it's potentially less exposure to molecules that are used pesticides, herbicides, which again, mostly preclinical data suggest could disrupt the gut microbiome and cause gut issues.

So from a food perspective, I guess that's where I start. Yeah. That's great. I always recommend trying to get food that has maximal nutrients, minimal toxins.

And so like I want to lean towards organic grass fed animal products, wild caught fish. So we're getting more nutrients, less toxins and those kinds of foods.

So yeah it's a great tip. Now you mentioned the, glial cells earlier when we were talking about brain inflammation. And we know that when we sleep we activate the lymphatic system and so in our society, most people are sleep deprived or their circadian rhythm is disrupted where, they're not sleeping at the right times of, of day that are optimal for lymphatic function.

And so let's let's talk about that sleep stress, some of these other lifestyle factors for sure. I think they cannot be overstated. The importance of the basics.

If you want to decrease neuroinflammation and improve your brain health, I actually think sleep is the single most important recommendation that I can make to a person if they're trying to improve their brain health.

And the reason is that when we think about what changes human behavior, people do things they enjoy. And I believe that you can have an amazing time eating really healthy food.

But I've also spent many years kind of going through the motions, both of understanding why that's important and

learning how to prepare delicious, healthy food.

And if you're just starting out on your journey and you're eating a bunch of junk food and I tell you what you really need to do is eat a giant bowl of kale three times a day.

You're going to say, you're crazy. It's not going to be fun. It's not going to taste good. However, sleep is something that everyone immediately enjoys and it has a direct, tangible effect on brain health.

I mean, skip a night of sleep and then go take a test. Go and then go for a long drive. And you will see immediately that there is a direct effect of sleep on your brain health.

Some of this relates to what you've described as, as it bears on the lymphatic system. And so this is pretty recent research. We're talking just since the year 2000 that researchers actually at OHSU initially discovered this system, which they called the lymphatic system, which is kind of a perivascular or along the vascular system.

And the idea here is that we have these, these canals within our brain, that allow our brain to flush out metabolic waste, the things that build up in our brains over the course of the day.

So that was the first discovery. And then it was discovered that this system seems to open up dramatically in the context of sleep, so that when we lay down, when we go to sleep, the system opens up.

And it seems like the clearance, meaning the waste clearance of our brain, spikes up around 50% when we sleep as opposed to in the daytime. So why does that matter?

Well, one reason is, if you think about it just at a very basic level, you want to clean out the garbage from your brain. You don't want to leave that in overnight because when it piles up, bad things might happen.

One of the examples that is often given is looking at this protein called amyloid. There's a lot of nuance here. You know, I think amyloid has been kind of seen as the villain in the story, maybe not so much, but there is data suggesting that amyloid may enhance inflammation in certain respects, and that when we sleep and open up the lymphatic system, we get much better removal of this amyloid from the brain.

So I think there are a number of reasons why sleep is important. One of those is you're literally cleaning out these brain toxins, some of which may be inflammatory.

And that's for me, more than enough reason. But if you need more, sleep is probably the most important thing you can do to improve your memory. People who don't sleep have trouble remembering things.

People who get more sleep tend to have better testing on memory and cognitive tasks. We know that people who get poor sleep, and importantly, around one third of Americans are consistently getting, you know, not enough sleep.

We also know that obstructive sleep apnea is a huge issue, but these are things that relate to inflammation and to conditions like depression and dementia.

I think if you have obstructive sleep apnea, your risk of having depression is 300 fold higher. If you are 300% higher, if you are a man and 400% higher if you're a female.

And we know that it dramatically enhances your risk of having inflammation in your body. And here's the interesting thing.

Sleep, Apnea, and Brain Recovery

If you put somebody on a CPAp, which is a machine that in essence, counters the problem in obstructive sleep apnea, their inflammatory markers come down.

So basically suggesting here that there is a direct relationship between quality of sleep and inflammation. So I think sleep is is absolutely essential.

We can go through some of my top tips for better sleep if that's helpful. And then otherwise you go over to stress. I definitely want to do that. First off, what are some signs of symptoms that somebody may have obstructive sleep apnea because it's one of the most underdiagnosed conditions.

Yeah, it's such a good question. So I would say if you are a person who is having a lot of trouble sleeping, who is basically very sleepy during the day, who finds that, you know, you're waking up during the night, who finds that you are kind of nodding off or fatigued?

You should go talk to somebody about your sleep. It is that important. We have this weird thing in society where there are certain things we think are worth saying doctors about, you know, you cut yourself, you say, oh, I definitely need to go see a doctor about this injury, but you have poor sleep.

I say, oh, well, I guess I just have poor sleep. I'll go take an over-the-counter, you know, I'll take some Benadryl to knock myself out. It's so unhealthy.

So I would say, if you are somebody who is struggling with your sleep, who has a lot of daytime fatigue, take it seriously. And one of the things you should consider is being evaluated for obstructive sleep apnea.

Now, there are various scoring systems. One you can look up is the stop bang system. It's kind of criteria that would make a person think, you know, maybe I should be evaluated.

Some of these are if you have a larger neck size, if you've been told that you snore, if you are overweight, if you are incredibly fatigued during the day.

I mean, these are things that you should consider as major glaring signs that you might have sleep apnea. And we know now that this isn't a disease for older people.

This is a condition that is affecting people across the age spectrum. So there's no clear definition as to who needs to be screened and who does not need to be screened.

But I would always side for if you're having trouble sleeping, if you're fatigued during the day, if you're told that you snore, if you wake up, your partner tells you, you wake up kind of gasping for air.

These are great reasons to be seen by a doctor. The other thing I'll just say is there are other conditions. You know, there's restless leg syndrome, there's narcolepsy, there are other sleep issues that can only be diagnosed if you go and have a sleep study.

So there's more reason than just sleep apnea to see a doctor about being evaluated. But one thing I think is really important is there's a lot a person can do, independent of having a sleep study that can significantly improve their quality of life.

And I can't tell you how many people, myself included, fall victim to these things, these habits that destroy our sleep quality. And a good example is drinking caffeine in the afternoon.

It's such an easy one to allow ourselves to have that second or third cup of coffee. Caffeine has a six hour half life, so if you drink a cup of coffee at 6 p.m., then at midnight, half of that caffeine is still floating around in your system, keeping you awake and destroying your quality of sleep.

Some other ones to think about alcohol. Some people, use alcohol as a way to get to sleep. But basically, being unconscious is not the same thing as quality sleep.

And we know that alcohol dramatically impacts the sleep architecture and leaves you. I mean, maybe you've had

this experience, but leaves you feeling incredibly un rested and leaves your brain in a bad spot.

And let me just throw in a quick fact here that I recently learned that I think is a very important consideration. So there's a lot of data each side of this argument around, should we be drinking alcohol?

Should we have wine? Is it healthy? Is it harmful? And there's data, like I said, on both sides of the spectrum. But I think one thing that I would hope most people would agree on is at a certain point, it becomes a clear toxin to the brain and to the body.

And so the study that I'm alluding to, it's a 2020 study where they reviewed additional research, and what they found is that the level of being hung over the next day.

So hangover symptoms, you know, foggy headed, gi upset, feeling out of it, correlated directly with levels of inflammation. So here they're looking at some cytokines.

These are immune markers like TNF alpha interleukin six C-reactive peptide or protein. The bottom line here being there may be some debate as to whether alcohol long term.

But definitely not before bed and definitely not to the point at which you're feeling hungover. So I think that's that's a really important consideration.

Part of the reason inflammation goes up because of alcohol consumption is probably because you ruin your sleep. And we know that people who get poor sleep tend to have higher levels of inflammatory markers.

So that's coffee and alcohol. I'd also just say as it relates to things that we consume before bed, stressful content is just it's so bad because it tells your brain we can't go to sleep right now.

There's something to deal with. So listen, I'm not saying not to be informed, but if you're going to be consuming the news, the worst time to do so is right before bed.

Your brain will see the signals, even if it's across the world in another country, and it is still pretty primitive. And it'll say this is a danger. So of course I'm not going to go to sleep.

Things are scary out there in the world. So it's not just that, it's also the blue light exposure, but I'd say really try to limit things that activate your brain before bed, of which coffee is a good example.

Caffeine and stressful news is another good example. Yeah, it's really well said. And you know, I always tell people don't have goals after 9 p.m. because also if you have a lot of goals, like even if it's like I gotta fold the laundry, I got to do this, that will activate more excitatory neurotransmitters in your brain and more stress hormones that inhibit melatonin and your natural sleep cycle so they don't start winding down.

I usually say 9:00, it's wind down time. Dim the lights, maybe some herbal tea, read a book right? Casual conversation with your your spouse or partner.

But yeah, try to try to wind down. And is there like has research shown kind of a best time for sleep? And what about the sleep environment, that somebody is in because I've had clients where, you know, I didn't find this out till later, but they, they fall asleep with the TV on in their bedroom.

Yeah. Don't do that. I mean, it's really easy, though, for me to say, this is good. This is bad. I understand everyone's in a different spot, and, you know, you kind of make do with what you've got.

I was in New York, last week for a conference, and, you know, I was really high up in this building. I think it was on the 41st floor. And yet, despite all my attempts to make sure the everything was closed, I was still hearing taxis honking at each other.

And we know that actually exposure to noise is at night is a huge disrupter for sleep. I don't think people realize this, even if you don't actively wake up and say, oh my gosh, what was that loud noise?

It still pulls you out of getting good sleep. And this is especially relevant in the second half of the night. The reason is we kind of build up a sleep pressure during the day, meaning we get more tired as the day goes on and that pressure starts to go down over the course of the night.

So we sleep less deep in the second half of the night, which means that when we are exposed to these noises, it can actually pull us out of quality sleep even if we don't wake up.

So I would say one thing to consider is decreasing noise. And there's the basic stuff. For example, if it's loud outside, close your window. Right. You might consider having a carpet or a rug in your room to help absorb some noises.

You might put something underneath your door, but one of the ones that, or one of the interventions that I take advantage of is a sound machine. I think standardizing with white noise is an amazing solution.

If you can't control for all the other noises in your environment. So sound is definitely one. Another one is light. I mean, this is pretty obvious, but you don't want to go to sleep in a room that is light because it actually does not tell your brain that you should go to sleep.

This is for both the stress reason and for this other reason. This light exposure reason is why I highly recommend that you just don't have a TV in your bedroom.

And I get it. Listen, I have had a TV in my bedroom. It's delightful to be laying there in bed and watching your favorite show. I think it's a bad plan.

I also think it's a bad plan to have your phone in your room for similar reasons. I think with the phone it's a little bit more psychological, right? As long as it's there, you can check it right before you go to sleep and you're going to want to check it first thing in the morning.

And, you know, if somebody texts you at 2 a.m., you're going to see the screen light up your it's going to wake you up. So you don't have electronic devices in the bedroom, specifically those with screens I think is a very reasonable, piece of this puzzle.

I mean, there are other things to consider. So temperature regulation, one area that's been really interesting is to see that the human body is, or this has been shown in the research.

The human body tends to do better with sleep when we lower our core body temperature. So we can help to promote that process by sleeping in a room that it's a little bit cooler.

And so the research would suggest somewhere in the neighborhood of between 65 and 68°F being a good temperature for the room. But that might mean for certain people, turning off the heat a little bit earlier in the day.

It might mean opening the windows for some people. I lived in Florida for a long time. That might mean using the air conditioner. And there are pros and cons to all of these things.

You know, if you have terrible quality air in your home and you're circulating it with a fan, yeah, that maybe isn't great. You know, that polluted air in the bedroom may damage quality of sleep, but if you're able to bring down the temperature and that is a great plan.

So again, somewhere between 65 to 68°F seems to be that ideal window. So we talked about, noise light. And then we just talked about, some of these other things that everyone should be doing as it relates to trying to create this sleep sanctuary, which I think is great terminology to try to create a place where sleep is most like, most likely to happen.

Let me give you one more tip here that, actually learned from Michael Bruce. So one thing many people have experienced, I believe, because I have, is anxiety in going to sleep at night.

So you lay there and everything else might be fine, you know, might be quiet, might be, dark, might be cool, and you might have everything set up. The nicest blankets, the nicest bed.

But your brain says, no, your brain says, what about that thing that person said at work? I have this thing I need to take care of tomorrow. So. And so.

I didn't get back to them with the phone call. I was supposed to give them. What Michael Bruce suggested is get a note card, or just get a little journal next to your bed and keep a pencil there, or a pen.

Stress Reduction and Brain Protection

And as you're going to sleep and as you are, having these thoughts run through your head, write them down, because now they exist in a place that your brain will feel comfortable knowing they're not going to be forgotten.

But you don't need to keep spending on them. And I've tried this a couple of times, and it's great because you can tell your brain, hey, it's taken care of.

We're going to handle it tomorrow. This is very rare, at least for me, that some of these things are important enough to actually get me out of bed to do something about it.

It's more just my brain saying when everything else in the day finally shuts down, oh, you forgot to do X, Y, or Z. And it's a nice thing to kind of offload that to the, to the journal or to the note card.

Yeah, my wife's done that. And also she likes to take well I abra magnesium of course. And then also like little gaba chews and she notes she feels like that has helped her sleep so much doing the journaling.

Ideally actually, she'll do it before she goes by. She already kind of knows, like, hey, this is a stressor, right? So I should do it in before bed, which, once you kind of get to know yourself, that's a great practice.

So by the time you get to bed, you've already kind of worked through that. And then, Gaba, type call pharma Gaba, right. As a, as a chewable. She'll, she'll take that before bed and, she notices that, that for her that really helps for me.

I've noticed actually taking melatonin for her, she gets no, no real benefit. And we track our sleep for me, melatonin, I get a lot better deep sleep and REM and also years ago, I started mouth taping.

I don't do that every night. But maybe a few times a month just to kind of make sure that, nasal breathing at night. And I found that to be extremely helpful whenever I mask as well.

I'm very light sensitive. She's very noise sensitive. So she'll even put in earplugs. And we have the, the white noise. I'm very light sensitive. So the moment the sun comes out, I'm up, like, I can't.

I can't sleep in, but. And I, and I wear a I mask and that has helped me a lot over the last decade or so. So these are just some, some great I love this.

And again it can be a super simple thing. Right. In your case it sounds like you're tracking your sleep. So you have a better sense of this maybe than most people.

But you know a lot of these things are very cheap to to do. I can't imagine the eye mask cost that much. And if you're a person who's perpetually waking up because of light, that's a good one. Or the earplugs.

That's what I learned for next time in New York. I mean, I wound up downloading an app on my phone to do a white

noise. Yeah, but it was not sufficient.

So the earplugs. An amazing thing to travel with. Just. Yeah, hotels can be really loud, so. Yeah. That's true. You don't. So you don't think about it when you book the trip, right?

But then, you know, you got the elevator, you got all this stuff going on. So. Totally. Yeah. Cool. Well, let's finish with stress. What's the impact of stress on neuroinflammation?

Yeah, stress is bad. Don't be stressed. What else is there to say? I mean, listen, this is one of these topics where I always want to be cautious because I'm not trying to tell somebody, don't experience stress.

That's the least helpful thing. It literally creates more stress when people know stress is bad and I'm told not to have stress. It is true, unfortunately, that when stress is left unchecked, it elevates levels of inflammation.

And it's kind of a little bit paradoxical because anybody who's ever used cortisone cream or steroids knows they've used it to basically suppress inflammation to calm down the immune system.

But I look at everything through the lens of what is the data that our bodies are getting. And when our brains are constantly sensing stress, it's telling us that this is not a safe place.

And so activating the immune system is actually an adaptive mechanism. It makes sense because it's getting ready to fight off some sort of a threat. Right?

Historically, the idea is if you were stressed, it meant that there was a danger on the horizon and your body needed to be ready for that. So, sure, you're going to ramp up, you know, your sympathetic tone.

You're going to have higher levels of heart rate, higher blood pressure. You're going to shut down digestion because you need to be ready to fight off some sort of an issue.

As we leave that alone for too long, it actually creates incredible imbalance in the immune system because I think the immune system just trying to respond to what it perceives as the issue, but it increases our chances of dying early.

So chronic stress, we know heart disease increases risk for diabetes as it relates to the brain. Chronic stress is linked to all all the problems I mean, I can go through.

It's the mental health. It's the cognitive health. Obviously anxiety, PTSD. I mean, these are kind of the prototypical stress related conditions, but also depression.

So the data that came out of adverse childhood experiences shows us that, people who experience significant childhood stress are at higher risk for a host of mental health issues.

So stress is not good in a chronic sense for our brains. I think that's clearly established. The more helpful part of this equation, in my opinion, is to say, what can a person do about it?

And here again, I'll bring in this caveat for all these lifestyle interventions, which is if you're having a really hard time with this, you know, yeah, we could talk about meditation and yeah, we could talk about maybe some dietary changes, but go see a person who can help you through this because we know that at the extremes of psychological, problems, people have real issues.

And I just want to say, as somebody who spends a lot of time in kind of the lifestyle modification space, there are people who need to see a doctor and be given a prescription.

As much as I don't want that to be the default state when it comes to mental health issues, there are people who really would benefit from, being seen by and treated by a physician in that way.

With that said, again, for most people, and most of the time we should be focused on prevention and strategies that we can take to help mitigate the effects of chronic stress, not get rid of them.

We're always going to have some stress. Otherwise, what's the point of this whole thing? Turns out little stress is good for us, but one of my favorite strategies and one that I always recommend, is nature exposure.

And the reason for that is when we look at the kind of risk benefit, and part of the risk is cost for these interventions, it is so well balanced towards the benefit, in the case of nature exposure, people who engage in nature exposure for as little as 20 minutes once a week have lower levels of cortisol measured in their saliva.

We also know that people who spend more time in nature have a decrease in their sympathetic activation, their heart rate, their blood pressure come down.

There's something naturally restorative about being in nature. So I think that's always close to the top of my list for people. Just get outside, be somewhere that you're not taking in the incredibly stressful modern world and where you're benefiting from the anti stress of just being in nature.

Another one is the mindfulness meditation practices. And I know people have heard about this before, but it really does work. We know from large scale trials that people who engage in mindfulness, meditative practices and faith based practices can have an anti-stress kind of component on their brain health.

And we see this from imaging studies. We see this from a number of different markers of stress. And I don't have a very specific thing that I would say, you've got to do this right.

You need to do 20 minutes of transcendental meditation. I don't think it works that way. I think what works is taking some time each day to kind of give your brain a chance for reflection, and that's really it.

You could take a mindful walk where you're just paying attention to your walking. You could focus on your breath for ten minutes. That's what I do each day.

But this is the kind of antidote to the hectic modern world that is so stressful. There are a number of other things we could talk about too, so there's some interesting work being done.

Again, you know, in psychedelics as it relates to helping to potentially reprogram some of these stress related pathways, it's hypothesized that in the case of, MDMA use specifically for post-traumatic stress disorder, that you're actually doing some amazing rewiring of the pathway between the prefrontal cortex and the amygdala, which is kind of the key stress mitigating pathway.

But again, for most people, and most of the time, I would say focus on the basics. So without going into every person's specifics as to what is causing their chronic stress, some of these things are unnecessary, right?

Watching two hours of cable news is a stressor, unless you are a news reporter and less as part of your job, you're probably doing yourself less of a service than you think by being, quote informed.

So yes, you can mitigate some of that by just not engaging as much. But on the flip side, I think nature, mindful and meditative types of practices are amazing.

Final Takeaways on Protecting Brain Health

Yeah. That's great. Some great information today. I really appreciate your time, Doctor Austin. And, you also have a great book called brainwashed that people can find.

That's New York Times bestselling book. A lot of great research in there, and people can find out more about you at Doctor austinperlmutter.com. Any last words of inspiration for our audience here?

Yeah, just Austin perlmutter.com made it. Yeah. But yes I do have one. So I would just say, you know, whoever you are out there who are is listening to is watching this as it relates to brain health in particular, I think it's important to understand that if you don't start taking steps to protect your brain today, you are based on the laws of probability, not going to like where you wind up.

And so one of the most important things in my life is this question of where is my energy coming from that sustains me in making consistent, healthy choices in my relationship, around my food, around my sleep, and I have, you know, family members to grandparents where lost to Alzheimer's disease.

I have seen firsthand what it is to work with patients who are experiencing brain problems, mental health issues, cognitive issues. It's not good. And the amazing news is that each of us have the power to dramatically lower our risk for brain related issues, if you feel like that is important to you.

So I really hope that you feel that this is important to you, because I think it is the most important thing. But I'll just say the power is in your hands.

Do not wait until you have to see a doctor to start taking agency over your brain health. Very empowering message. Thanks again for your time, doctor Austin Perlmutter guys check him out austinperlmutter.com and we'll see you in a future interview.

Be blessed everybody.