

FOCUS ON: AUTOIMMUNE

DAVID PERLMUTTER, MD

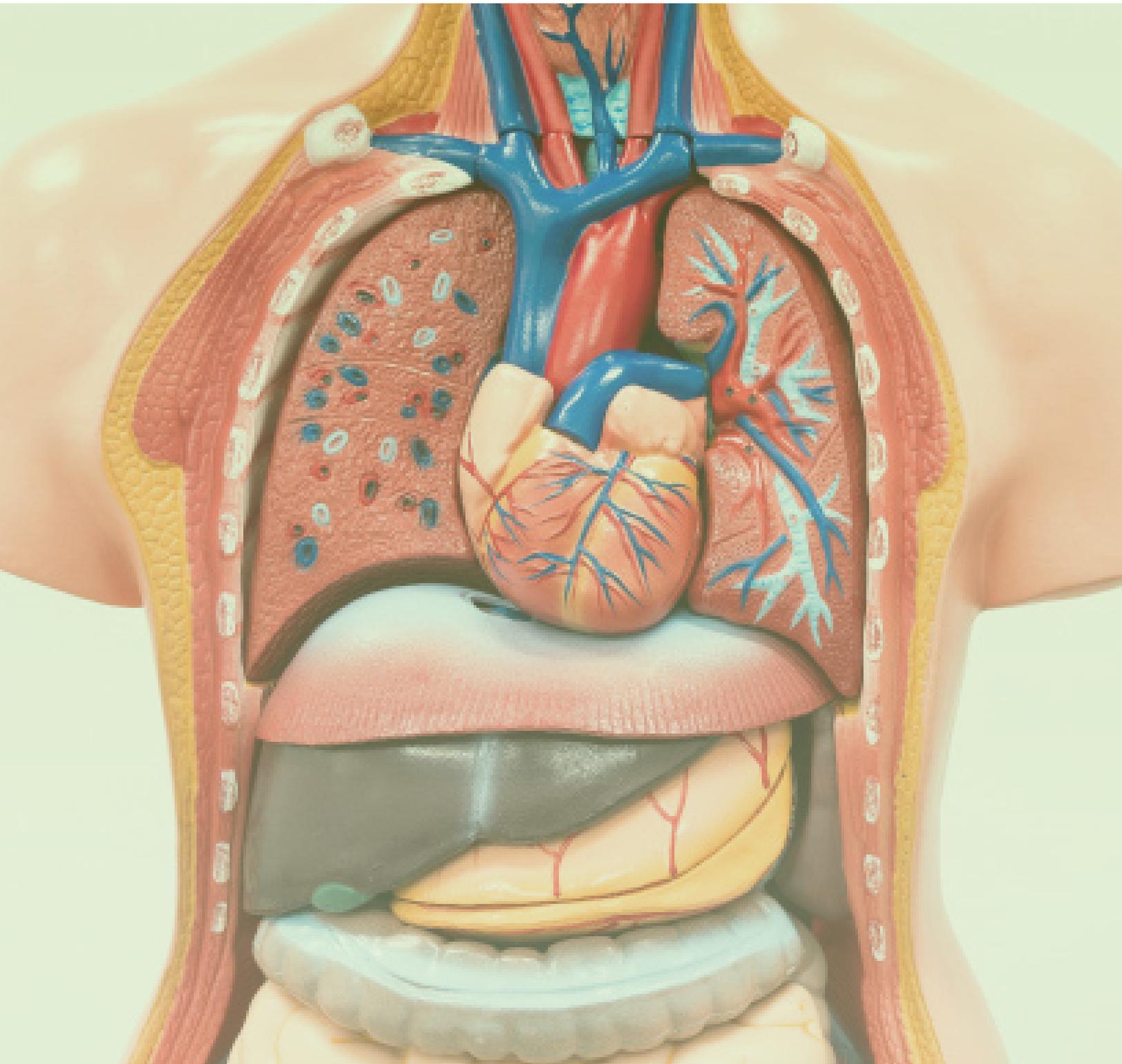


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FROM THE DESK OF DR. PERLMUTTER

A Note Before Reading

Normally we think of our immune system as protecting our body from everyday concerns like the flu, or serious infections and diseases. But did you know that the health of our immune system can also impact the health of our brains?

It's a fact.

During the Betrayal Solution you're going to learn all about this and the role that inflammation, immune regulation, and the health of our gut microbiome plays in our overall health.

While this may seem overwhelming, this means that science is poised to reveal powerful new treatments and prevention strategies, as it relates to autoimmunity. In the pages that follow, you'll discover some of the latest research on all of these subjects, but if I can give you one piece of advice to take away from this all, it would be this: health begins with the food you eat.

When you've finished reading, please do [visit my website](#) to learn more about how we can support healthy immune function with proper lifestyle choices. I'll continue to scour medical journals for the latest research, and help you understand the simple steps we can all take to live long, healthy lives.

David Perlmutter, MD



How Gut Bacteria Protect The Brain

Do you know about the blood-brain barrier? The blood-brain barrier (BBB) acts as a gatekeeper, protecting the brain from various toxic elements, while allowing the entrance of various life-sustaining nutrients like water, amino acids, and gases, that are essential for the function of the brain. It is formed by cells that line the capillaries and are connected by what are called “tight junctions,” quite similar to the tight junctions in the cells that line the gut.

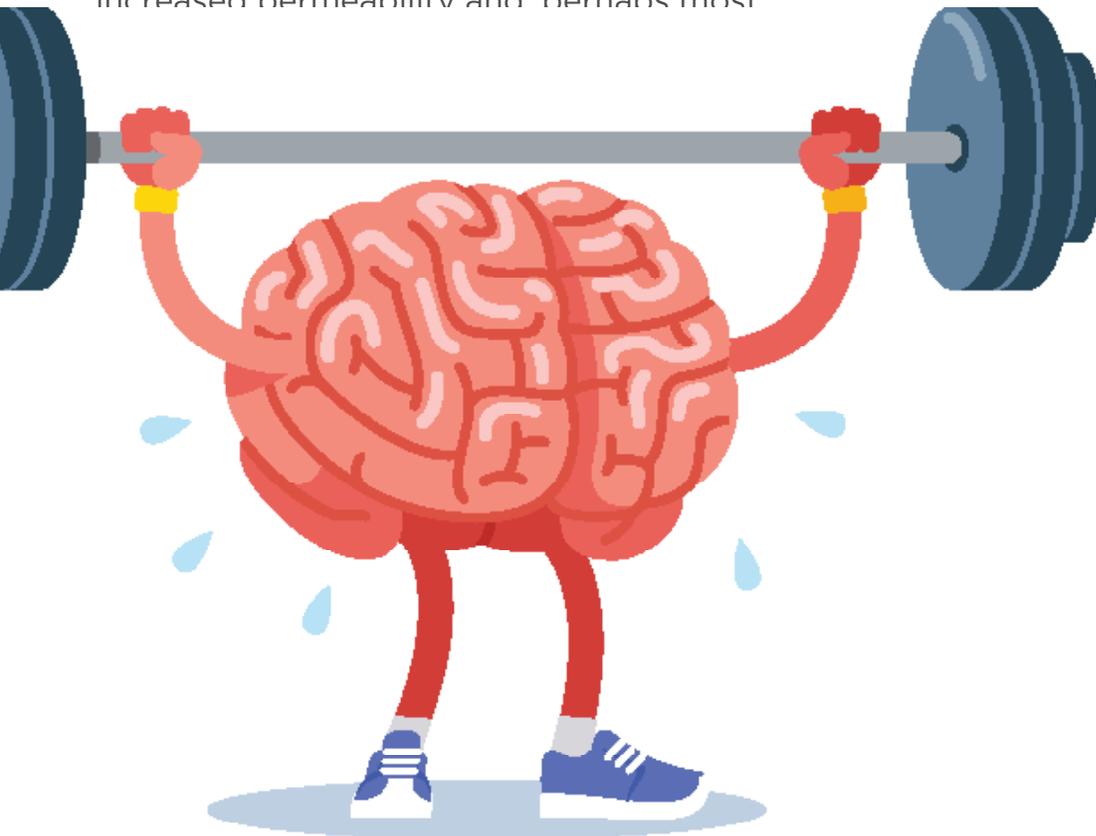
Any number of brain disorders is associated with breakdown of the BBB, including infections, and even cancer. As such, scientists have aggressively studied the BBB to determine specifically what leads to increased permeability and perhaps most

can be done to reestablish the barrier, and protect the brain.

In a stunning research in the journal *Science Translational Medicine*, researchers at the Karolinska Institute in Stockholm studied the blood brain barrier in mice that were “germ-free.” That means that the mice used in this experiment did not have bacteria living within their intestines. Using highly sophisticated brain-scanning technology, the researchers demonstrated that the blood brain barrier in these mice was significantly compromised, basically a situation of what we may call a “leaky brain,” and this leakiness of the barrier persisted into adulthood.

Even more compelling was their finding that when these mice received a fecal transfer, meaning that their intestines were inoculated with the fecal material including bacteria from a healthy mouse, the blood brain barrier improved.

Research is truly groundbreaking. The implications of being able to improve the health of the blood brain barrier by making changes in the gut are huge. It's a first, for the first time, a genetic tool that may have wide application in brain



disorders. Professor Sven Pettersson, the principal investigator involved in the study was [quoted in Science Daily as stating:](#)

Given that the microbiome composition and diversity change over time, it is tempting to speculate that the blood-brain barrier integrity also may fluctuate depending on the microbiome. This knowledge may be used to develop new ways for opening the blood-brain-barrier to increase the efficacy of the brain cancer drugs and for the design of treatment regimes that strengthens the integrity of the blood-brain barrier.

Second, this research adds further evidence to the notion that a wide array of human health issues may well depend upon the diversity and complexity of the array of bacteria that lives within the gut, known as our microbiome.

It is very humbling to consider that what seems to be emerging as our most powerful leverage point, in terms of treating a variety of disease states, may well rest in the hands of the hundred trillion bacteria that consider our bodies their home. These are the fundamentals of a new horizon in medicine that are explored in my book [Brain Maker](#).

BDNF
GOES UP

BRAIN DISEASE
GOES DOWN

davidperlmutter MD #GRAINBRAIN

This infographic features a vertical split background. The top half is orange with the text 'BDNF GOES UP' in white. The bottom half is yellow with the text 'BRAIN DISEASE GOES DOWN' in white. At the bottom, there is a small icon of a person, the text 'davidperlmutter MD', and the hashtag '#GRAINBRAIN'.

3

MAIN FUNCTIONS OF YOUR INTESTINAL LINING:

1. IT IS THE VEHICLE OR MECHANISM BY WHICH YOU OBTAIN NUTRIENTS FROM THE FOODS YOU EAT.
2. IT BLOCKS THE ENTRANCE INTO THE BLOODSTREAM OF POTENTIALLY HARMFUL PARTICLES, CHEMICALS, BACTERIA, AND OTHER ORGANISMS THAT CAN POSE A THREAT TO YOUR HEALTH.
3. IT PLAYS A KEY ROLE IN REGULATING INFLAMMATION, THE CORNERSTONE OF ALL DEGENERATIVE DISEASES.

davidperlmutter MD #BRAINMAKER

This infographic has a green background with a pattern of small white circles. It features a large black number '3' at the top. Below it is the title 'MAIN FUNCTIONS OF YOUR INTESTINAL LINING:' in bold black text. A list of three numbered points follows. At the bottom, there is a small icon of a person, the text 'davidperlmutter MD', and the hashtag '#BRAINMAKER'.

“ANYTHING THAT AFFECTS THE GUT ALWAYS AFFECTS THE BRAIN.”

DR. CHARLES MAJORS

davidperlmutter MD #GRAINBRAIN

This infographic has an orange background. At the top is a white line drawing of the human digestive system. Below the drawing is a quote in white text: '“ANYTHING THAT AFFECTS THE GUT ALWAYS AFFECTS THE BRAIN.”'. Underneath the quote is the name 'DR. CHARLES MAJORS' in white. At the bottom, there is a small icon of a person, the text 'davidperlmutter MD', and the hashtag '#GRAINBRAIN'.

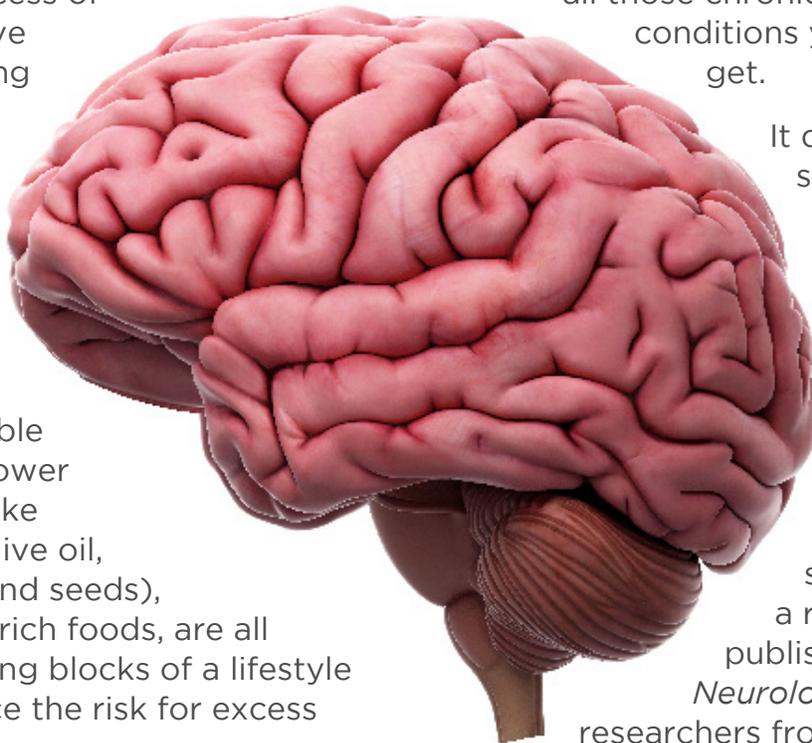
Inflammation Today Means Brain Shrinkage Tomorrow

As I have emphasized over the past decade, the fundamental mechanism that underlies neurodegenerative conditions, including Alzheimer's disease, Parkinson's disease, multiple sclerosis, and other issues (think diabetes, coronary artery disease, and even cancer), is the process of inflammation. We've got to do everything we can to bring inflammation under control. Dietary choices like limiting sugar and carbohydrates, avoiding gluten, eliminating vegetable oils (corn oil, sunflower oil), increasing intake of healthful fats (olive oil, avocado oil, nuts and seeds), and favoring fiber-rich foods, are all fundamental building blocks of a lifestyle that helps to reduce the risk for excess inflammation.

We know that there is a higher level of the chemicals that mediate inflammation in the blood of individuals with higher blood sugar, caused by many of the poor choices outlined above. Again, higher blood sugar correlates with higher levels of inflammation.

Degree of inflammation is, to a significant amount, determined by the health and

diversity of gut bacteria. So issues that threaten gut bacterial diversity, like stress, artificial sweeteners, and acid-blocking medications, pave the way for increasing inflammation. This threatens your long-term health by raising your risk of virtually all those chronic degenerative conditions you don't want to get.



It doesn't make sense to wait until you're having an issue with one of these diseases to begin a program designed to reduce inflammation. This notion was powerfully supported in a recent study

published in the journal *Neurology*. In this [report](#), researchers from multiple institutions endeavored to determine if inflammation in midlife would have any consequences for the brain later in life.

They studied a group of 1,633 participants (with an average age of 53) by looking at their blood levels for various markers of inflammation. These five inflammatory markers were compiled into what was called the "inflammatory composite score."

After 24 years, the participants underwent a special brain scan to measure the size of various areas of the brain. The study revealed a marked correlation between midlife elevation of inflammatory markers and reduction in size of key brain areas, including the hippocampus, the brain's memory center. The relationship between these inflammatory markers and shrinkage of the brain later in life was modified by age and race in that younger participants, as well as Caucasian participants, with higher levels of inflammation markers in midlife were more likely to show reduced brain volumes during the follow-up.

The authors concluded:

“Our prospective findings provide evidence for what may be an early contributory role of systemic inflammation

in neurodegeneration and cognitive aging.” The important take-home message here is in line with John Kennedy’s statement: ‘The time to fix the roof is when the sun is shining.’

That means that we should be doing everything we can to reduce inflammation today, long before some chronic degenerative condition manifests. In this study there was a clear correlation between elevation of markers of inflammation and risk for shrinkage of the brain, and who wants that? This is what preventive medicine is all about. It’s about doing the right things today to pave the way for a healthier tomorrow.

**INFLAMMATION
TODAY
MEANS BRAIN
SHRINKAGE
TOMORROW**



Gut Inflammation Affects the Brain

The fundamental mechanism that underlies such seemingly disparate issues as autism, Alzheimer's disease, Parkinson's disease, multiple sclerosis, and various other neurodegenerative conditions, is the process of inflammation.

But it now looks as if inflammation may actually begin in the gut and subsequently affect the brain as a downstream mechanism. [In a submission to the Journal of Neuroinflammation](#), researchers at Cedars-Sinai Medical Center in Los Angeles reported on a fascinating experiment.

Using a laboratory mouse, they administered a chemical, dextran sodium sulfate (DSS), into the drinking water of some of the animals. They then examined the brains of these animals at various times, up to 26 days after the chemical was placed in the water. DSS was used because it specifically causes gut inflammation.

What the researchers discovered was, in fact, quite profound. First, they demonstrated dramatic evidence of gut inflammation following exposure to DSS; there was an increase in inflammatory cells in the intestinal lining.

What was more compelling, however, is what went on in the brains of these animals. The scientists found that there was first an increase in the chemical mediators of inflammation, IL-6 and IL-1 beta, followed by activation of the brain's inflammatory

cells, called microglia.

Even more compelling was what they found in the animals' brain memory center. This area of the brain, the hippocampus, plays a role not only in memory but also in regulation of mood. Normally, it is fairly straightforward to demonstrate persistent growth of new brain cells in the hippocampus in the mouse brain (as it is in humans). However, when inflammation in the gut was brought on by administration of DSS, there was a dramatic reduction in the growth of new brain cells in the animals in which inflammation had been induced.

Not only was there a reduction in the growth of new brain cells, but in addition there was a reduction in the differentiation of the brain stem cells into fully-functioning neurons.

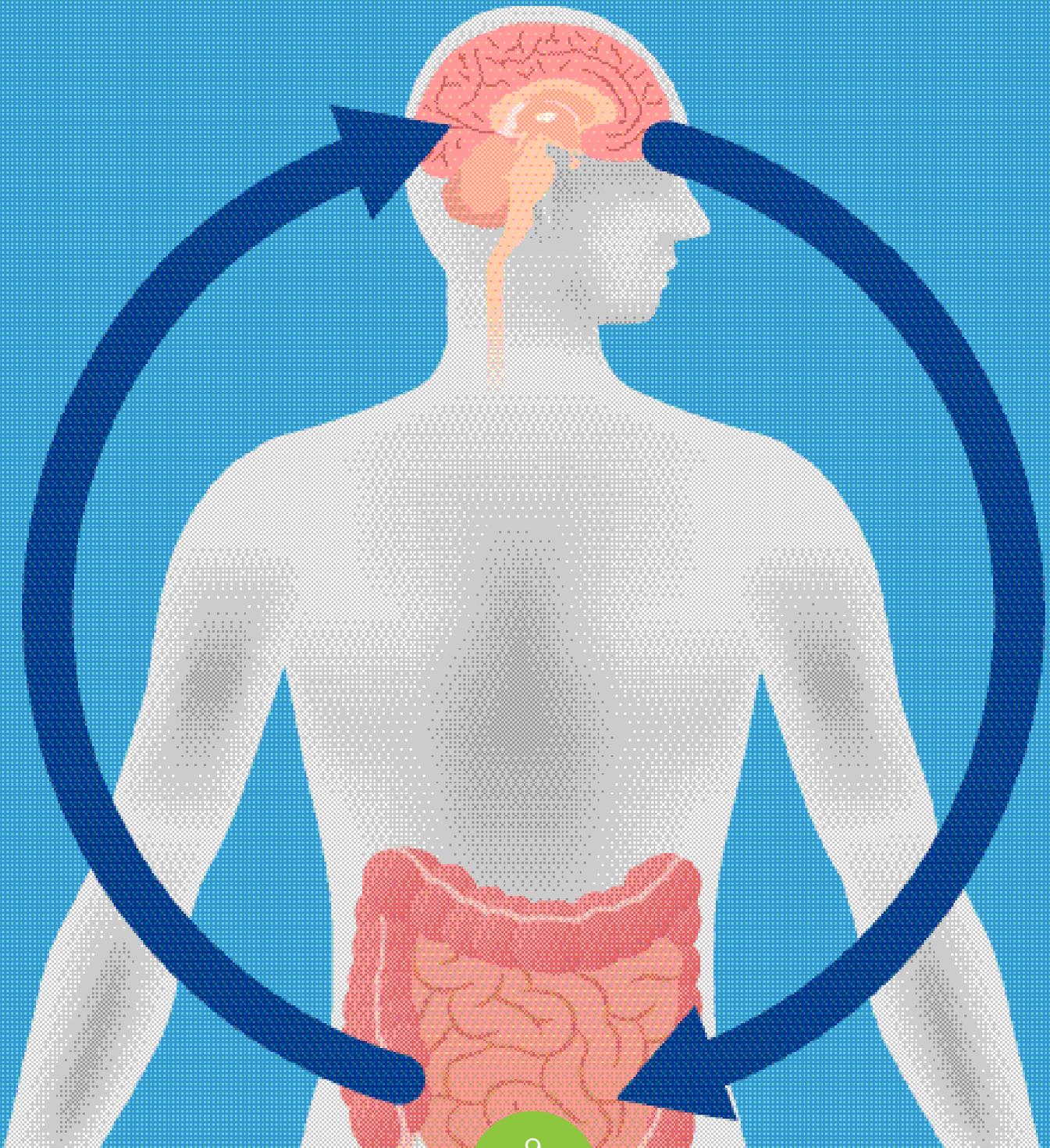
The implications of this study are breathtaking. Not only does it shed important light on the explanation as to why individuals with inflammatory bowel disease are frequently compromised with respect to cognitive function as well as mood, but it further extends our understanding of the pivotal role of gut-related issues, in this case inflammation, as they impact the brain.

It's time that we begin looking in earnest outside of the brain for clues to our most pernicious brain maladies. By and large, researchers have come up fairly empty-

handed when looking only at the brain in when trying to explain mechanistically what goes on in things like Alzheimer's disease and Parkinson's disease.

I admit that this is an animal study and that it is certainly inappropriate to extrapolate too aggressively from the results. Nonetheless, we are moving forward with

a new concept of brain health and disease, and these researchers are to be praised for bringing us this valuable information.





Rebalance the Gut, Rebalance the Immune System

It is very exciting to see the incredible increase in scientific research being released that relates gut issues to various health problems elsewhere in the body. The research that explores this relationship in terms of autoimmune conditions is particularly interesting, not just because it links gut-related problems to changes in immune balance, but in terms of how this new understanding might open the door for new treatments for these challenging conditions.

In a [recent issue of the journal *Neurotherapeutics*](#), researchers embarked on their study with the accepted premise that intestinal permeability (leakiness of the gut) has been widely evaluated in terms of its relationship to various forms of inflammatory bowel disease, as well as celiac disease, and that imbalances in the gut bacteria are involved in this relationship.

They also described the well-known relationship between an autoimmune, inflammatory condition of the bowel, Crohn's disease, and multiple sclerosis (MS). Both of these conditions are now characterized by increased permeability, or leakiness, of the gut.

With this understanding as a background, the researchers moved forward and postulated that perhaps some of the effectiveness of various first-line oral medications that have proven useful in MS may actually owe some of their

effectiveness to the fact that they help with reducing gut permeability, possibly through changes brought about by the gut bacteria.

I can assure you that only a few years ago, these ideas would not have been anything that mainstream science would have considered. We have certainly come a very long way in appreciating the important role of the gut, and specifically the balance of gut bacteria and regulation of gut permeability, in terms of its role in autoimmunity, and keeping inflammation in a check.

I have no doubt, moving forward, that we will soon see the development of pharmaceutical interventions for MS, as well as other autoimmune conditions, that specifically target rehabilitation of the gut bacteria to bring about reduction in gut permeability and balancing of the immune system. This will be a manifestation of holistic medicine finally entering the mainstream, whereby it becomes commonly accepted that events in one part of the body can clearly affect the health of another area.

Truthfully, this understanding of the interrelationships between seemingly disparate parts of the body has been how medicine has been practiced for centuries. What a blessing that we are finally embracing this understanding once again.

The Microbiome - Implications for Global Health

What science has revealed over the past decade about the role our resident microbes play in keeping us healthy has truly been remarkable. It's now clear that the more than 100 trillion microbes living on and within us are, moment to moment, playing a fundamental role in virtually every system within the human body. Who would have conceived that research would have revealed, for example, that the bacteria living within the colon are helping shape our mood, regulating our appetite, manufacturing health-sustaining vitamins, controlling our immune system and inflammation, and even influencing the expression of our DNA?

This expanding science is compelling, humbling, and, at the same time, empowering, as we now are beginning to make real inroads into understanding how changes in the microbiome (the collection of the microbes, their genetic material, and the metabolic products they create) affect health, disease resistance and longevity.

It's certainly clear that so many of our lifestyle choices, including diet, sleep, exercise, nutritional supplements, managing stress, socializing, etc., influence our state of health. And over the years, studies have identified the direct mechanisms whereby these factors influenced health, for better or worse.

These days however, we are seeing a proliferation of research that seeks to

explain how these important factors influence health as seen through the lens of the microbiome. So, in a sense, this is a two-step process. Lifestyle choices affect the health of our resident microbes, and they in turn influence our health.

Hippocrates is credited with stating, "All disease begins in the gut." And while this dictum certainly doesn't account for cases like trauma, as it relates to so many of our modern diseases, it's well on track. Changes in the gut bacteria are, for example, strongly related to chronic degenerative diseases (think Alzheimer's disease, osteoporosis, type 2 diabetes, and coronary artery disease), which, as a classification, have been determined by the World Health Organization to represent the number one cause of death on the planet, surpassing infectious diseases, trauma, and even war.

This means that the state of health of the human microbiome is directly involved in the globe's leading cause of death.

In terms of nurturing the gut bacteria to prevent these ailments, without a doubt the most important consideration is food. Our food choices have an overriding impact on the health, diversity, and productivity of our resident microbes. Unquestionably, the most important task for each of us is to supply our bacteria with *prebiotic fiber*, the unique type of dietary fiber that is not digested by us humans, but allows our microbes to thrive. [Foods rich in this](#)

special fiber include dandelion greens, garlic, onions, leeks, chicory root, Jerusalem artichoke, asparagus, and many other fruits and vegetables. Health food stores

are helpful for those who may not be eating enough prebiotic-rich foods by supplying effective prebiotic supplements derived from natural sources like acacia gum and baobab fruit.

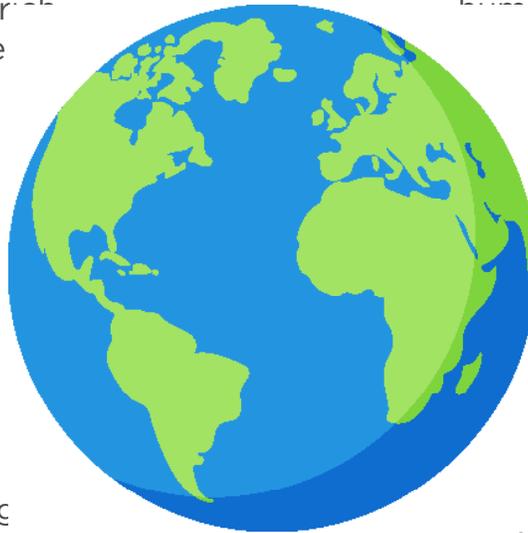
It's also important to embrace the fact that so many of our day-to-day choices can seriously threaten the health of the microbiome and, as such, open the door to threatening health issues. For example, French researchers showed a strong relationship between the consumption of artificially-sweetened beverages and risk for developing type-2 diabetes. This massive 2013 study evaluated the diets of close to 70,000 women, following them for 14 years. The scientists discovered that, compared to those not consuming soda, those who drank artificially sweetened beverages had about a 200% increased risk for becoming diabetic, and this result was far higher than the risk for those women drinking the sugar sweetened beverages (34%). [i]

The following year, Israeli researchers went about trying to understand these findings. In their study, they demonstrated dramatic changes occurring in the microbiomes of both humans and animals induced by artificial sweeteners along with important metabolic changes specifically related to glucose tolerance, the hallmark of diabetes. Other issues the human subjects experienced included weight

gain, increased central obesity, higher fasting blood sugar, as well as elevation of HbA1C, a marker of average blood sugar. Even more intriguing was the researchers' demonstration that transferring

human fecal microbial material to normal laboratory animals almost immediately affected their blood sugars, as is seen in diabetics. The authors concluded:

Artificial sweeteners were extensively introduced into our diets with the intention of reducing caloric intake and normalizing blood glucose levels without compromising the human 'sweet tooth'. Together with other major shifts that occurred in human nutrition, this increase in (non-caloric sweeteners) consumption coincides with the dramatic increase in the obesity and diabetes epidemics. Our findings suggest that (non-caloric sweeteners) may have directly contributed to enhancing the exact epidemic that they themselves were intended to fight.[ii]



American researchers studied close to 4,000 adult subjects for 9 years and showed a direct dose response relationship between the consumption of diet drinks and obesity. This means that the more diet drinks were consumed, the more weight was gained. [iii]

It's important to understand the vast implications of these studies. These alterations in the microbiome that enhance metabolic changes affecting things like glucose balance and body fat are of great concern as just these two factors alone have been associated with increased risk for a large list of health issues including cancer, heart disease, osteoporosis, depression, and even Alzheimer's disease (see further down). So the health implications related to damaging the microbiome with artificial sweeteners go well beyond diabetes.

It's now clear that dementia, specifically Alzheimer's dementia, may also share in this relationship. Boston researchers, publishing in the journal *Stroke*, followed 1,484 elderly individuals for 10 years. Their evaluations included not only frequent testing of their brain function, but also keeping track of their diets as part of the [Framingham Heart Study](#). The results of this enduring project revealed an increased risk for Alzheimer's disease, nearly 3-fold, in chronic consumers of artificially-sweetened beverages. Interestingly, stroke risk was increased almost as much. Moreover, there was no increased risk of stroke or Alzheimer's disease in those who consumed sugar-sweetened beverages. In their conclusion, the authors explained their findings by stating:

Artificial sweeteners have been shown to cause glucose

intolerance in mice by altering gut microbiota and are associated with dysbiosis (negative changes in the gut bacteria) and glucose intolerance in humans.[iv]

This is important since diabetes has been associated with as much as a 4-fold increase in risk for the development of Alzheimer's disease.

Further, to date, efforts by pharmaceutical companies to develop any meaningful treatment for Alzheimer's disease have come up empty-handed. This is to say that there is currently **no meaningfully effective treatment for Alzheimer's**, now affecting some 40 million people around the globe. As Dr. Michael Schnaider Beerli recently stated in the journal *Neurology*:

Despite great scientific efforts to find treatments for Alzheimer's disease, only 5 medications are marketed, with limited beneficial effects, on a limited number of patients, without modification of the disease course.[v]

This fact should really encourage us to take a serious look at factors known to be associated with increased risk for this disease. And it seems pretty clear that artificial sweeteners, likely by virtue of their damaging effects on the microbiome, show strong association.

While it's instructive to explore how dietary

choices like the use of artificial sweeteners may connect to risk for serious health issues through their effects on the microbiome, the upside of these findings is that they will undoubtedly spur research that investigates how the microbiome, once damaged, may be restored. This represents a very new playing field for medical researchers that is replete with huge potential, especially as it relates to these compelling chronic degenerative conditions.



[i] Guy Fagherazzi, et al., Consumption of artificially and sugar-sweetened beverages and incident type 2 diabetes in the Etude Epidémiologique auprès des femmes de la Mutuelle Générale de l'Education Nationale-European Prospective Investigation into Cancer and Nutrition Cohort. *Am J Clin Nutr* 2013;97:517-23

[ii] Suez J, Korem T, et al. Artificial sweeteners induce glucose intolerance by altering the gut microbiota. *Nature*. 2014;514:181-186

[iii] Sharon P. Fowler, et al., Fueling the Obesity Epidemic? Artificially Sweetened Beverage Use and Long-term Weight Gain. *Epidemiology. Obesity* (2008) 16, 1894-1900

[iv] Matthew P. Pase, et al. Sugar- and Artificially Sweetened Beverages and the Risks of Incident Stroke and Dementia A Prospective Cohort Study. *Stroke*. May, 2017;48

[v] Michael Schnaider Beerli. Brain BDNF expression as a biomarker for cognitive reserve against disease progression. *Neurology*, 2016 Feb 23;86(8):702-3

THE 2 KEY MECHANISMS THAT LEAD TO
BRAIN DEGENERATION

INFLAMMATION **THE ACTION OF FREE RADICALS**

👤 davidperlmutter MD #BRAINMAKER

FOODS FOR A BETTER BRAIN

FATTY FISH
BROCCOLI
TURMERIC
GREEN TEA EXTRACT
COFFEE

👤 davidperlmutter MD

MORE THAN
70%
OF YOUR IMMUNE SYSTEM IS HOUSED IN YOUR GUT

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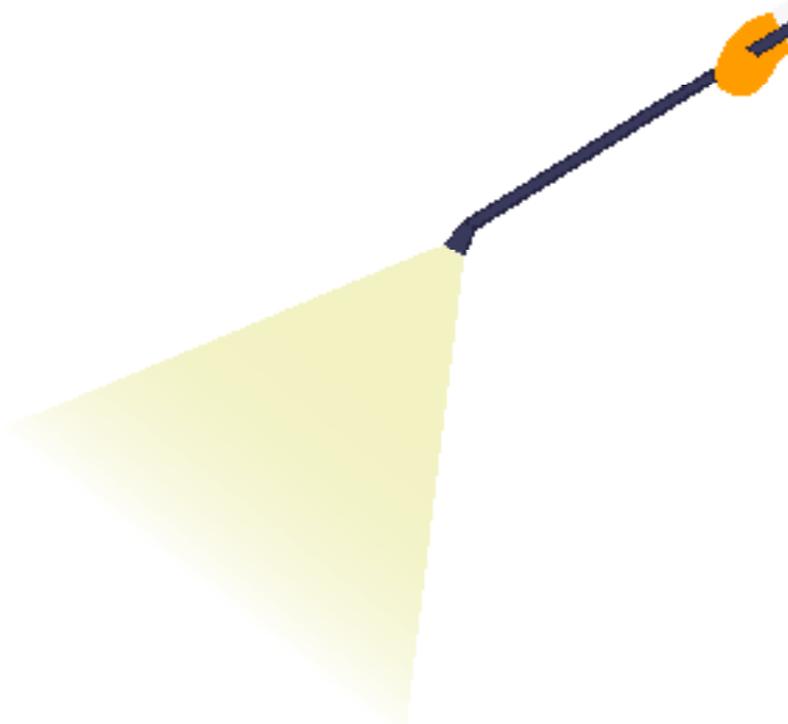
The Real Reason GMO Matters

When I lecture to the general public, as well as to healthcare professionals, I often ask the question, “How do you feel about GMO foods?” The results are almost universally negative. Generally, the audiences come to the conclusion that, for whatever reason, GMO foods are “bad.”

My next question probes a bit further: *why?* It’s at that point that very few hands are raised. People generally have the sense that there’s something threatening and sinister about GMO foods, but, for the most part, they don’t know why.

So let’s take a step back. I’d like to explore why it is that we should indeed do everything possible to avoid GMO foods.

First, let’s take a look at the scope of the issue. At least 90% of the canola, cotton, corn, soy, and sugar beets sold in United States come from seeds that have been genetically engineered. The main reason that these crops are genetically engineered is to make them resistant to herbicides. That means farmers can spray these crops to kill weeds, and because of genetic engineering, the crops themselves are not affected by the poison. Nonetheless, residues of the poison remain in the food, which is then consumed across our country. My point is that most of the agricultural products consumed by Americans come from genetically engineered seeds and have residues of herbicides.



[glyphosate leads to the formation of cancer cells](#). Beyond her work, it's very important to remember that the World Health Organization recently labeled glyphosate as being "probably carcinogenic" in humans.

Dr. Seneff, [a past guest on The Empowering Neurologist](#), has found that glyphosate has a number of dangerous effects on biological systems that may strongly relate to its ability to form cancerous tumors. These include direct damage to DNA, interruption of amino acid balance, removal of trace minerals, as well as impairment of detoxification. [As she recently stated:](#)

Epidemiological evidence supports strong temporal correlations between glyphosate usage on crops and a multitude of cancers that are reaching epidemic proportions, including breast cancer, pancreatic cancer, kidney cancer, thyroid cancer, liver cancer, bladder cancer and myeloid leukaemia.

It's been estimated that approximately 92% of Americans are in favor of GMO labeling. This makes sense. We absolutely should know whether or not we are buying and consuming foods that are potentially laced with a cancer-causing agent, glyphosate. Beyond that, there sure are a lot of foods and other consumable products that are now labeled non-GMO, so we can vote with our wallets and support those producers and manufacturers that are dialed into the importance of this issue.



THE EMPOWERING NEUROLOGIST

David Perlmutter, MD & Dr. Amy Myers

DP The thyroid is, as you call it, the “master gland.” It controls the metabolism, as you say, and every cell has thyroid hormone receptors on it. It seems to me that we’re hearing an awful lot about thyroid problems these days. How prevalent is thyroid disorder in American society?

AM In America, we believe that there are about 27 million people who have it. That’s an estimation. I think it’s probably far greater than that. And of those 27 million, 60% don’t even realize they have it. I think it’s an epidemic right now, and conventional medicine doesn’t do a great job of detecting it. Because of that, as well as many environmental factors, we’re in an epidemic state with the thyroid. I bet there’s not a single [reader] out there who doesn’t know someone with thyroid dysfunction.

DP You touched upon something I wanted to jump into — the people who may not know about their thyroid problem, which may be the cause of some of their issues. You talk about how so many people can go to the doctor and end up with a thyroid blood test, a thyroid panel, that is actually within the normal range, and yet still have some significant thyroid issues.

AM All these people identify with any number of symptoms, whether it’s hyperthyroid symptoms or hypo-, which is far more common, and yet they’ve gone to the doctor and heard, “Oh, we’ve checked your thyroid, everything’s normal.” There are two common ways for that to be absolutely wrong. The first is that conventional doctors are typically only checking a TSH, or a thyroid stimulating hormone. That only tells us what the pituitary’s doing. It’s a signal to the thyroid, telling it to produce more hormones. It’s not even checking what the thyroid itself is actually doing. It’s very limited.

So what I typically check is a much larger panel, that does include a TSH, but it also includes a T4, a free T4, a free T3, a reverse T3, and then I check antibodies to pick up whether their thyroid is being attacked by their immune system. That’s called Graves’ disease when it’s hyper, and Hashimoto’s when it’s hypo. The most important test

to look at is a free T3. Our free hormones are the ones that matter. When you're looking at a total, they're bound to other proteins and we can't use them. But when it's a free hormone, it's able to go into receptors and into other cells. It's that free T3 that keeps us warm, gives us energy, keeps us from having brain fog, and regulates everything else in our body.

Conventional medicine is typically not even checking free T3.



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full interview](#)

THE EMPOWERING NEUROLOGIST

David Perlmutter, MD & Dr. Susan Blum

DP When the immune system becomes overactive, we can develop what's called bottle immunity, where the immune system actually reacts against our own body tissue, like the thyroid gland for example. It's called Hashimoto's thyroiditis. Can you tell us what Hashimoto's is all about?

SB Hashimoto's is considered an autoimmune disease. I'll tell you about the thyroid first and then we'll talk about autoimmunity. The thyroid is a gland that lives in your neck, and it's an endocrine organ that makes thyroid hormones, which are responsible for a lot of very important functions in our body. A lot of people walk into my office and go, "There's something wrong with my thyroid!" It's a common misconception that this is the single thing that causes weight gain, hair loss, slow metabolism, and fatigue — and it does cause all that, but there are other things that cause that too. That's the thyroid gland. What happens is, there's something called autoimmunity. An autoimmune condition is when your immune system attacks the gland. Your immune system, rather than fighting the bad guys, turns its attention on your own tissues and starts fighting your own cells and tissues. Depending on where that attack happens, and to which tissue, that's how you get the disease.

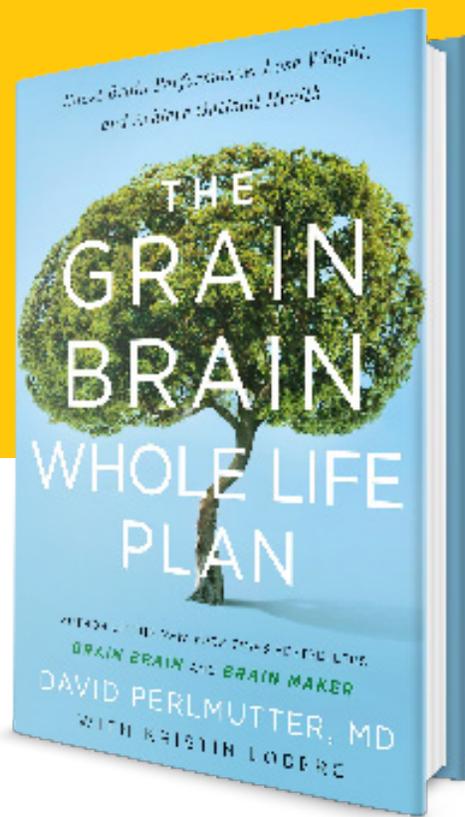
I had Hashimoto's thyroiditis, which means my immune system was attacking my thyroid gland. But there are other conditions, as you know, like multiple sclerosis, when the immune system attacks the brain, and rheumatoid arthritis, where the immune system attacks the joints. Autoimmunity can strike any tissue in your body.

As a functional medicine doctor focusing on complex chronic illness, it crosses all barriers. In functional medicine, we don't cut the body up into pieces, metaphorically. We see the person as a whole.

SB Starting from the top, the simplest preventative measures are lifestyle. Food, right? What does the gut need? The gut needs a lot of vegetables and fiber, a lot of plant-based material, to feed it and keep it happy and healthy. In the 1950s, when we started processing food and taking a lot of the nutrients out of it, we stopped feeding our good bacteria, and instead, we started eating a lot of processed foods, which are all filled with sugar and simple carbohydrates. It's very interesting, they've done studies that show if you completely change what you eat, your bacteria can change within three days. Food has a big effect on the flora. That's the simplest place to start.



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full interview](#)



About The Grain Brain Whole Life Plan

It's time to turn advice into action. [The Grain Brain Whole Life Plan](#) is your practical, comprehensive empowerment guide for achieving optimal health, preserving brain vitality, losing weight and reducing your risk for chronic diseases. Dr. Perlmutter leverages the leading edge of published science on nutrition and wellness, taking the lessons of Grain Brain and Brain Maker to create a powerfully actionable plan for optimizing health and achieving peak mental performance. The Grain Brain Whole Life Plan – live happily ever after.



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