

# How to Prevent Alzheimer's Disease—A Neurologist Speaks Out

## STORY AT-A-GLANCE

- > Alzheimer's disease is currently at epidemic proportions, with 5.4 million Americans—including one in eight people aged 65 and over—living with it. There is no known cure, and few truly effective treatments
- > Research suggests the best hope is in prevention focusing on exercise and diet, specifically replacing carbohydrates with higher amounts of healthful fats, and moderate amounts of high-quality protein
- > Gluten sensitivity appears to be involved in most chronic disease, including those affecting the brain, because of how gluten affects your immune system. Glucose and fructose, (sugars) and carbohydrates can also have powerfully toxic effects
- > Preventing and treating neurological disorders requires severe restriction of gluten and casein. You also need to address your gut flora

## By Dr. Mercola

Alzheimer's disease is at epidemic proportions, with 5.4 million Americans—including one in eight people aged 65 and over—living with the disease.<sup>1</sup> In the next 20 years, it is projected that Alzheimer's will affect one in four Americans, rivaling the current prevalence of obesity and diabetes.

There is still no known accepted cure for this devastating disease, and no effective treatments. **Alzheimer's drugs** are often of little to no benefit at all, which underscores the importance of prevention throughout your lifetime.

Fortunately, Alzheimer's prevention is actually easier than you might think. There's exceptionally compelling research showing that your brain has great plasticity,

which *you control* through your diet and lifestyle choices.

Here, Dr. David Perlmutter—probably the leading natural medicine neurologist in the US, from my perspective—shares his insights into this pervasive problem. I don't know anyone who exceeds his level of expertise in traditional neurology and still shares the same philosophical orientation that I have.

He has a clinic in Naples, Florida, and he's been very active in publishing his findings in peer-reviewed medical journals. He's also a fellow of the American College of Nutrition, as am I.

*"I have a very strong background in traditional neurology," Dr. Perlmutter says. "As a neurologist for many years, I became more and more frustrated with our lack of ability to actually treat diseases. We were really only treating symptoms.*

*When I finally began to understand what the proximate cause of the various illnesses we were dealing with was, I realized that mainstream neurology, though I don't want to sound too critical, really pays no attention to the causation part of the story."*

## **The Role of Grains in Disease Propagation**

He realized an answer would never become apparent by simply writing prescriptions and hoping for the best. Instead, he began investigating the role of nutrition on brain health. Alzheimer's, according to the RAND Corporation, is currently costing us some \$200 billion a year, yet it is largely preventable. And virtually no one talks about that!

*"This is a disease that is highly revenue-producing for mega factories of various so-called Alzheimer's drugs," Dr. Perlmutter says. "The point is there is no meaningful treatment in 2013. It is a disease predicated on lifestyle choices primarily, because of the high amount of carbohydrates/sugar that we now, as Western-culture individuals, are consuming.*

*It's a preventable disease. It surprises me at my core that no one's talking about the fact that so many of these devastating neurological problems are, in fact, modifiable based upon lifestyle choices."*

Dr. Perlmutter specifically looked at the impact of gluten and casein, or wheat and dairy primarily, on autoimmune diseases. His New York Times Bestseller, **Grain Brain**, reveals his findings, the cornerstones of which are the powerfully toxic role of glucose (sugar) and **carbohydrates** in one's diet.

He also stresses that gluten sensitivity is involved in most chronic disease, including those affecting the brain, because of how gluten affects your immune system. Unfortunately, many people, physicians included, still believe that if you don't have celiac disease, gluten is fair game and you can eat as much of it as you like.

Full-blown **Celiac disease**, which is gluten sensitivity affecting your small intestine, affects an estimated 1.8 percent of people in Western cultures. But gluten sensitivity may actually affect as much as 30 to 40 percent of all people, and according to Dr. Alessio Fasano at Massachusetts General Hospital, *virtually all of us* are affected to some degree.

This is because we all create something called zonulin in the intestine in response to gluten. This protein, found in wheat, barley and rye, makes your gut more permeable, which allows proteins to get into your bloodstream that would otherwise have been excluded. That then sensitizes your immune system and promotes inflammation and autoimmunity. This kind of gut permeability is also promoted by things like antibiotics and chlorinated water.

## **The Gut-Brain Connection is Critical to Understand**

Once gluten sensitizes your gut, it then becomes more permeable and all manner of previously excluded proteins—including casein and other dairy proteins—have direct access to your bloodstream, thereby challenging your immune system.

*"They've been talking about it for years and years (which is now just gaining traction in mainstream medicine) that our health really depends on maintaining a barrier of the intestine from the bloodstream," Dr. Perlmutter says.*

*"We now understand that the so-called blood-brain barrier, or that barrier that keeps things out of the brain where they don't belong, is also affected by gluten, according to new research. It's a very exciting time when we recognize that our biggest exposure to the environment is actually the lining of our intestines – not our lungs, not our skin. We are in fact very much dependent on the microbiota, the bacteria living in the gut, to maintain our health."*

According to Dr. Perlmutter, much of our current disease burden stems from the fact that we are contaminating our immune systems with proteins to which the human immune system has never, in the history of humankind, been previously exposed to. While not discussed in this interview, a MAJOR factor is the development of **genetically engineered (GE) grains**, which are now pervasive in most processed foods sold in the US. These GE crops create proteins never before encountered in any natural grain or food, so GE grains deliver a *double-whammy* against your immune system. **Food allergies** clearly appear to be one of the most noticeable side effects of a GE-grain diet.

*"We recognize that food is far more than protein, carbohydrates, fat, and micronutrients, and that food really does represent **information**. The foods that we consume are instructing our genes. Therefore, that's a very empowering notion: you can change your genetic destiny based upon the food choices that you make," Dr. Perlmutter says.*

Dr. Natasha Campbell-McBride, another neurologist who has also done remarkable work in this area as a result of seeking a solution for her autistic son, came to the same conclusion discussed by Dr. Perlmutter. Essentially, preventing and treating neurological disorders requires severe restriction of gluten and casein. You also need to address your gut flora.

*"With specific response to your comments about autism, we do know that some of the milk-related proteins tend to lead to antibody production in the brains of autistic children, blocking what's called the folate receptor," Dr. Perlmutter says. "One of the propositions is that there's this blockage of the ability of folate to get into the brains of certain children, and this leads to all kinds of cognitive and neurocognitive issues.*

*The State University of New York has actually developed a screen for looking at folate receptor antibodies. We have found that to be actually very helpful... It's a very exciting time for those of us not just in neurology but in all branches of medicine, who are suddenly realizing that we've come full circle. We're now back to understanding that nutrition plays a pivotal role in the health of humans."*

## **Avoiding Dairy Does NOT Include Avoiding Dairy Fats**

I believe it would be wise for most people to avoid pasteurized dairy (primarily casein but also other proteins) and gluten. That said, there are subgroups of people who are particularly prone to harm from these proteins, and as a rule *must* avoid them in order to maintain their health. Bear in mind that *dairy fat* like butter, which has virtually no protein, is *not* problematic and can be consumed even by those who are sensitive to milk proteins. As stated by Dr. Perlmutter:

*"We need to eat fat. We're suggesting a revolutionary dietary change, telling people they should go on this new diet—which is only the diet humans have eaten for the past 2.6 million years! We've always eaten fat. Fat is the most wonderful health-providing food that we can obtain in the human diet. Of course, we have to qualify that with what **type** of fat you are eating."*

Beneficial health-promoting fats that your body—and your brain in particular—needs for optimal function include organic butter from raw milk, clarified butter called organic grass fed raw butter, olives, organic virgin olive oil and coconut oil, nuts like **pecans** and macadamia, free-range eggs, wild Alaskan salmon, and avocado, for example.

According to Dr. Perlmutter, our current dietary fat phobia "has absolutely been the cornerstone of our most common degenerative diseases of the day, including Alzheimer's." Why? Because when you cut dietary fat and keep protein about the same, you're going to fill in the gaps with health-harming carbohydrate foods, predominantly grains.

*"This whole grain goodness, as the US Department of Agriculture is trying to convince us we should focus on in terms of our dietary choices, is the cornerstone of our most devastating diseases. I mean, brain diseases like Alzheimer's, cardiovascular disease, and obviously, what leads to them, diabetes, which is so prevalent in Western societies. Again, it's the getting away from fat and the substitution with wheat- and corn-based carbohydrate (high-fructose corn syrup) that really, in my opinion, explains this huge explosion of degenerative conditions that are crippling us medically and crippling us economically as well," he says.*

*"But the **quality** of the fat that we consume is absolutely fundamental. When we're saying high-fat diet, we're not talking about prepared foods on the Twinkie aisle at the grocery store that contain modified trans fats; hydrogenated fats that are clearly coffin nails. They're a great risk for brain disorders, heart disorders, diabetes, etc. We're talking about these beautiful, natural fats that we have been consuming for more than two million years."*

## **Recommended Tests to Evaluate Disease Risks**

There are specific tests that can help you determine your level of sensitivity to dairy proteins like casein, as well as **gluten**. The most effective test for gluten sensitivity, according to Dr. Perlmutter, is a test called the Cyrex Array 3 test. Most laboratories, when you order a test for either gluten sensitivity or celiac disease specifically, will look for antibodies against just one type of gliadin. However, there are *dozens* of different types of gliadin that can incite immune reaction or immune reactivity. The Cyrex test looks at 24 different parameters of gluten sensitivity, which gives you a much clearer picture.

*"Most commonly when I'm seeing patients, they've already had some form of preliminary gluten sensitivity test which was negative, and we find [out the truth] by doing the Cyrex test," he says.*

The same lab offers another test, Cyrex Array 4, which looks at cross-sensitivity in people who are gluten-sensitive. This test includes a dairy product panel as well as **amaranth**, spelt, quinoa, rice, coffee, chocolate, and other foods that may be cross-reactive with respect to gliadin. Two other tests recommended by Dr. Perlmutter that are potent predictors of Alzheimer's disease specifically are:

- **Fasting blood sugar**, as this is a powerful predictor of your risk for Alzheimer's disease. In this interview, he discusses research showing a very direct correlation between your fasting blood sugar and the rate at which your brain shrinks. The higher your fasting blood sugar, the greater your risk. Interestingly, brain shrinkage occurs at blood sugar levels that are currently considered within the normal range (90-100), and even small elevations of blood sugar directly correlate to increased risk for having shrinkage of your hippocampus, your memory center, which is the hallmark of Alzheimer's disease.
- **Hemoglobin A1c**. This is a marker of your average blood sugar over about a three-to four-month period of time. Again, there's a striking correlation between hemoglobin A1c and the rate at which your brain is shrinking.

Both of these factors, your blood sugar and hemoglobin A1c, are entirely within your power to control, as they respond to dietary changes. Quite simply, you lower them by *reducing your carbohydrate consumption*. As stated by Dr. Perlmutter:

*"You can absolutely control your blood sugar. It's a lifestyle choice. Do you eat grain? Do you drink orange juice in the morning? Are you having cereal in the morning? Have you decided to go low-carb and high-fat? In the latter case, your hemoglobin A1c will come down, your fasting blood sugar will come down, and lo and behold, you have taken positive steps to reduce your risk of brain shrinkage."*

## How the Science of Neuroplasticity Changes the Game

It's important to realize that, despite what the media tells you, your brain is not "programmed" to shrink and fail as a matter of course as you age. We now know that every activity in which you engage—be it exercise, the foods you eat, the supplements you take, your personal relationships, your emotional state, your sleep patterns—all of these factors dramatically influence your genetic expression *from moment to moment*. Any given gene is not in a static "on" or "off" position. Neither are they *deterministic*. You may be a carrier of a gene that never gets expressed, simply because you never supply the required environment for it to turn on.

*"We interact with our genome every moment of our lives, and we can do so very, very positively," Dr. Perlmutter says. "Keeping your blood sugar low is very positive in terms of allowing the genes to express reduced inflammation, which increase the production of life-giving antioxidants. So that's **rule number one: You can change your genetic destiny.***

***Rule number two: you can change your genetic destiny to grow new brain cells, specifically in the hippocampus... Your brain's memory center regenerates. You are constantly growing new brain cells into your 50s, 60s, 80s, and 90s – throughout your lifetime – through a process called neurogenesis.***

*That said, these two ideas come together because you can turn on your genes through lifestyle choices that enhance neurogenesis and that enhance regrowth of cells and expansion of your brain's memory center. This was proven by researchers recently. They demonstrated that there are factors under our control that can make that happen."*

Lifestyle strategies that promote neurogenesis and regrowth of brain cells include the following. All of these strategies target a specific gene pathway called BDNF or brain-derived neurotrophic factor, which promotes brain cell growth and connectivity as demonstrated on MRI scans.

- Exercise. In one year-long study, individuals who engaged in exercise were actually growing and expanding the brain's memory center one to two percent



per year, where typically that center would have continued to decline in size.

- Reducing overall calorie consumption
- Reducing carbohydrate consumption
- Increasing healthy fat consumption
- Increasing your omega-3 fat intake and reducing consumption of damaged omega-6 fats (think processed vegetable oils) in order to balance your omega-3 to omega-6 ratio. I prefer krill oil to fish oil here, as krill oil also contains **astaxanthin**, which appears to be particularly beneficial for brain health. As explained by Dr. Perlmutter, it belongs to the class of carotenoids, and is very "focused" on reducing free radical-mediated damage to fat, and your brain is 60 or 70 percent fat

## The Importance of Vitamin D and Cholesterol for Brain Health

Vitamin D also plays a fundamental role in **brain health**, immune function, and inflammation. According to Dr. Perlmutter, vitamin D influences the expression of more than 913 genes. Sadly, a vast majority of people are dramatically deficient in this critical steroid hormone, in large part because they've been fooled into fearing sun exposure. You've also been deceived into fearing cholesterol, which is another critical component of health.

*"Obviously, sunshine makes vitamin D in your body from some precursor. When I ask my patients what is that precursor, nobody seems to know. I tell them it's this horrible thing called cholesterol, and their eyebrows go up," he says. "Cholesterol is so drastically important for health, because (1) it's the precursor for which you make vitamin D and (2) it's a fundamental compound of every cell in your body and made by every cell in your body. It's a brain antioxidant. It's a precursor for all the steroid sex hormones – it's fundamentally important."*

According to Dr. Perlmutter, research shows that elderly individuals with the lowest cholesterol levels have the highest risk for Alzheimer's. They also have the highest

risk for dying. As he says, the war on cholesterol is fundamentally inappropriate and harmful.

*"I say to my audiences very frequently, "If cholesterol is so bad, what you're saying is that if you believe in evolution or if you believe in creation – either way – either nature got it wrong or God got it wrong by putting the ability to make cholesterol in every one of our cells. Why would that be a mistake?"*

*It's not a mistake. We are desperate for cholesterol. It's a fundamental player in every cell membrane. We've been on a high-cholesterol diet for millions of years, and it has served us well. In fact, our genome has been selected based upon that diet, being on a high-cholesterol diet – eating eggs, animal fat, and animal protein."*

## The Benefits of Fasting

Dr. Perlmutter places most of his patients on a ketogenic, high-fat, low-carbohydrate diet that is gluten-free, along with prescribed aerobic exercise. Certain supplements may also be used, especially if the patient is vitamin D deficient or has any other critical deficiency.

I've previously interviewed [Dr. Seyfried](#), who is a researcher at Boston University and connected with Harvard. He was one of the leading investigators to adopt the [ketogenic diet](#) for a neurological condition, the treatment of seizures, and then from there started investigating its use for treatment of cancer. Another PhD, [Dr. D'Agostino](#) in Florida, is also doing similar work in this area.

It's interesting to note that it all stemmed from the treatment of intractable seizure disorders; before they realized that it was also a potent treatment adjunct for cancer patients. Most interestingly, cancer cells do not have the ability to any significant degree to metabolize fat and are almost completely dependent on metabolizing sugar. When you go on a ketogenic diet, you effectively deprive the cancer cells of sugar, which starves them, while allowing normal cells to thrive. Beyond that, you also need to recognize that the balance of organisms in your intestine play a critical

role in maintaining your immunity. Clearly, if you're fighting disease of any kind, you want your immune system to function optimally.

*"When you damage your microbiom, the balance of bacteria, in your gut by taking chemotherapy, at the very least add in an aggressive probiotic approach to keep bad bacteria count healthy," Dr. Perlmutter says.*

I'm particularly fond of using fermented vegetables, because they can deliver extraordinarily high levels of beneficial bacteria. Most people aren't aware that in a healthy serving of sauerkraut – two to three ounces or so – you're getting the equivalent of nearly 100 capsules of the highest-potency probiotic you can buy. It's clearly one of the most cost-effective alternatives. Furthermore, if it's fermented with a starter culture, which we're going to be offering soon, you can also get very high levels of **vitamin K2**, which is crucial to balance vitamin D.

Dr. Perlmutter also highly recommends fasting. Contrary to popular belief, the ideal fuel for your brain is not glucose but ketones, which is the fat that your body mobilizes when you stop feeding it carbs and introduce coconut oil and other sources of healthy fats into your diet. A one-day fast can help your body to "reset" itself, and start to burn fat instead of sugar. As part of a healthy lifestyle, I prefer an **intermittent fasting** schedule that simply calls for limiting your eating to a narrower window of time each day. By restricting your eating to a 6-8 hour window, you effectively fast 16-18 hours each day. To learn more, please see this previous **article**.

*"The easiest way to become ketotic is just to stop eating. Because if you go through your sugar stores and then your glycogen stores relatively soon, you begin to burn fat, the most incredibly powerful source of fuel for human physiology and especially for the brain," he says.*

## More Information

To learn more, I highly recommend Dr. Perlmutter's New York Times Best Selling book, **Grain Brain**. You can also find more information on his web site, **DrPerlmutter.com**,<sup>2</sup> or on his **Facebook page**, which he posts to every day,

highlighting recent research and upcoming conferences and lectures. You can also find more tips and guidelines in this previous article on [Alzheimer's prevention](#).

*"These changes that people can make in their diets are not draconian," he says. "The only thing that makes it difficult is because of what we are told by society we should be eating. Those statements are not given to us with good, sound scientific backing. Again, these are simple but profound choices that people can make."*

I couldn't agree more. Applying the strategies discussed in this interview and article can dramatically reduce your risk of succumbing to Alzheimer's and other chronic diseases. Overall, it will also raise your general quality of life. Clearly, prevention is much easier than treating it after the fact. And even though there is this element of neuroplasticity, it's far better to prevent brain degeneration to begin with. As Dr. Perlmutter says:

*"The time to fix the roof is when the sun is shining. That's the segment of the population I really want to target – people who have not yet had cognitive issues but are at risk, which is basically all of us. In fact, this is the time to make the changes – while you're still healthy. Time to cut back on the carbohydrates, increase your consumption of good fats, get out and exercise... these are the fundamentals that could keep these problems from happening in the first place."*