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• The *Future* of Natural Healthcare •

• *Heal Your Brain* •

INFLAMMATION AND YOUR BRAIN

Many people suffer from chronic issues that affect the brain. It would be nearly impossible to not know someone who has been affected by conditions such as ADD, Alzheimer's, anxiety, autism, brain fog, depression, or fatigue. In this guide we are going to be talking about natural mental health, what to test for, what to avoid, and how to have a healthy and happy brain.

In the mainstream medical system, if someone is struggling with one of these issues, he or she is typically left to pick between pharmaceutical A or B. For many, medications like antidepressants or anti-anxiety medications provide only temporary or marginal relief from their suffering. For others, they live in a constant state of medicated numbness. If medications don't provide sustainable solutions for you, or if you feel like they are not addressing the root cause of why you feel the way you do, this information may be very helpful. In here I want to share with you the underlying commonality between most of the people I see suffering with these mental health concerns: Inflammation.

We hear the term “inflammation” a lot when dealing with chronic health conditions. What is inflammation exactly, and how can it cause problems with your brain? Inflammation is normally a healthy response. For example, when you hurt your knee, acute inflammation enables your body to repair itself. Chronic inflammation, on the other hand, is inflammation with no end in sight. Like a fire that's fueled with endless gasoline, chronic inflammation doesn't heal — it destroys. Chronic, low-grade, systemic inflammation has been directly implicated in just about every chronic disease; brain conditions are no exception. Unlike other organs, your brain has no pain fibers. Chronic inflammation of the brain can manifest as problems like brain fog, depression, or fatigue.

A growing field of study referred to as the cytokine model of cognitive function, attempts to explain how inflammation affects how your brain works. Cytokines are proteins that regulate your body's immune response. Wherever there's inflammation there are pro-inflammatory cytokines. There are many [different ways in which your brain](#) can become inflamed, both directly and indirectly. One of the main inflammatory mechanisms I come across doesn't even necessarily have to start directly in your brain, but actually can originate in your “second brain:” your gut.

Just like your brain, the inner mucosal lining of your gut has no pain fibers. 95% of your body's serotonin, your “feel-good” hormone, is made in your intestines and it has many of the same neurological features as your brain. How your gut-brain axis works is also at the center of the cytokine [model of mental health](#).

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Another key player is [zonulin](#), a protein that's released during inflammatory gut conditions like [leaky gut syndrome](#), small intestinal bacterial overgrowth, or a chronic yeast or parasite infection. One of zonulin's jobs is to open up your [intestinal tight junctions](#), which are typically closed to protect your gut's delicate environment. Zonulin, and certain bacterial endotoxins called lipopolysaccharides (LPS), which are normally isolated to your gut, can be released from your gastrointestinal system and circulate throughout your body, causing [systemic inflammation](#). Just as zonulin opens your protective gut lining, it has also been [shown to open](#) your protective blood-brain barrier. The leaky gut has now caused a leaky brain.

When your brain's protective [barrier is breached](#) it can activate the glial cells, your brain's immune cells. More than half the weight of your brain is made up of these immune cells. Once these "immune soldier" glial cells are activated it can turn on an inflammatory response in your brain, and they don't have an off switch. This chronic inflammation [can decrease](#) neuron firing and can be [linked](#) to just about any problem of the brain. In return, altered brain output then can also decrease its communication with your gut, impairing its function, causing a vicious, perpetual cycle of inflammation. This inflammation can also impact your brain's communication with the endocrine (hormone) system [such as the thyroid](#) (HPT axis) and [adrenal glands](#) (HPA axis).

In addition to inflammatory gut conditions, we must also [investigate](#) and address any other underlying causes of brain and gut inflammation, such as:

- Gluten Sensitivity
- Food intolerances
- Autoimmune Conditions
- Poor Sleep Habits
- Blood Sugar Dysregulations
- Chronic Stress
- High Homocysteine Levels
- Hormonal Imbalances
- Past Head or Neck Injuries

These stressors can impact your brain health more than most realize. It requires further investigation into what these actually mean for your brain health and what leads to further damage.

COMMON FACTORS OF INFLAMMATION

Now we need to discuss some of the most common factors that are hurting your brain and mood. These are things we all need to eliminate to regain your once sharp mind and build your natural hormones to elevate your mood. These seven culprits from all areas of life will have a negative impact on your mood, and eliminating them will be another piece in the multifaceted puzzle of feeling your best and reducing inflammation:

1. SUGAR

Refined sugar and its many synonyms are ubiquitous on ingredient lists. For a healthy brain, the first thing you should dump is [sugar](#). There are at least two potential mechanisms through which refined sugar intake could exert a toxic effect on your mental health. First, sugar actually suppresses activity of a key growth hormone in the brain called BDNF. BDNF levels are [low in people with depression](#). Second, eating sugar-containing foods will trigger a myriad of chemical reactions in your body that will upregulate chronic systemic inflammation. Over time, inflammation will disrupt the normal functioning of your immune system, and wreak havoc on your brain.

2. GRAINS

There are many ways in which eating grains will affect your brain. Just like refined sugar, grains can cause inflammation in your body that will affect your brain. Grain proteins like [gluten](#) and [lectins](#) are also well linked in the literature with having a negative impact on your gut, which in turn affects your brain.

Although just 1% of Americans have a diagnosis of [celiac disease](#), it's most likely vastly under-diagnosed. In fact, only 10% of people with the disease exhibit obvious GI symptoms. And [research](#) now suggests that celiac disease can present itself strictly as a neurological problem.

In reality, celiac disease is the extreme end of the gluten sensitivity-autoimmune spectrum — there's also an estimated [1 in 20](#) Americans living with what's called non-celiac gluten sensitivity.

Gluten has been shown to [increase](#) levels of the protein zonulin in the gut leading to [leaky gut syndrome](#). This gut permeability allows undigested food proteins and bacterial endotoxins to pass into the blood stream, activating an inflammatory-immune response in your body.

Elevated zonulin levels in the gut have been [linked](#) to elevated zonulin levels in the brain. Translation: A leaky gut can lead to a leaky brain. Once the blood-brain barrier has been breached, your brain's immune system — glial cells — can be activated. Glial cells will then cause inflammatory cascades throughout the brain. In other words, gluten is a sort of gateway food that could allow other foods to pass through the gut and brain lining.

A [report](#) in the American Journal of Clinical Nutrition explains how we've seen a rapid change in our world over a relatively short period of time. Our current food supply, soil depletion, and [environmental toxins](#) have all been new introductions to human existence. Put another way, around 99% of our genes were formed before the development of agriculture, around 10,000 years ago.

Researchers now argue that they're essentially a mismatch from our genes. And more recent refining, hybridization, and genetic modification of the grain supply have likely only made things worse. Our genes are living in a whole new world.

Bottom line: Wheat is not what it once was. And in our modern, toxic world, we have less wiggle room for unhealthy foods than generations before us. It's just a matter of someone's own genetic interaction with gluten that determines if, when, and how a brain problem will be triggered.

3. ARTIFICIAL SWEETENERS

Those little yellow, blue, and pink bags are wreaking havoc on your mood. In a [double-blind study](#) of the effects of aspartame on people with mood disorders, findings showed a large increase in serious symptoms for those taking aspartame. Fifty percent of aspartame is the isolated amino acid phenylalanine, which is neurotoxic and goes directly into the brain, depleting your serotonin levels. When you lower serotonin, it can trigger a variety of different mood disorders.

4. MSG

Monosodium glutamate or MSG is a processed flavor enhancer that is commonly added to many convenience foods, soups, processed meats, Asian foods, and frozen dinners. MSG is an excitotoxin which [can affect your brain chemistry](#) and your body's endocrine (hormone) system. Sometimes it's difficult to spot a food containing MSG because it hides in food ingredient labels behind many different names, including glutamic acid, glutamate, autolyzed yeast protein, textured protein, natural flavors, and hydrolyzed corn.

5. TOXIC HOUSEHOLD PRODUCTS

There is no doubt that we are inundated with toxic chemicals in our world. As far as environmental toxins, there are some things that are out of our immediate control. With that said, there are many things that we can control what we are exposed to. Chemicals that are used in common household cleaning products have been linked to altered brain function. The majority of beauty products used today are filled with chemicals that will literally interfere with your body's hormones, affecting how you feel and think. These ingredients in beauty products are anything but pretty. The [Environmental Working Group](#) found that one in eight of the 82,000 ingredients used in personal care products are industrial chemicals, many of them linked to hormone and mood disorders. Remember, your skin is your largest organ and highly absorptive. If you can't eat it, don't put it on your skin.

6. HEAVY METALS

Chronic heavy metal toxicity is overlooked as a factor for brain problems. There are two types of heavy metal poisoning: acute and chronic. Chronic heavy metal levels of mercury or lead can be an insidious issue for chronic conditions like depression, anxiety, chronic fatigue, and brain fog, and [can be linked to almost any mood or brain disorder](#). One reason why chronic heavy metal toxicity goes undiagnosed is because unlike acute poisoning, which is circulating in your blood, chronic metal toxicity has leached into your body's tissues like your bones, fat, and brain. Because of this, a blood test might come back normal. Proper diagnostic testing is essential for this issue. Pulling the metals from the body using chelating agents and measuring those levels using a [Urine Heavy Metals](#) test is how I uncover this piece of the puzzle for my patients.

7. CHRONIC GUT INFECTIONS

To have a healthy brain you need to have a healthy gut. Your gut is your second brain, with around 95 percent of your serotonin residing there. Underlying infections of yeast, fungus, or bacteria will wreak havoc on your gut and brain. Many mood and brain disorders are linked to [an unhealthy gut](#).

Everybody has a unique combination of factors that are causing them to feel the way they feel. A comprehensive health history, labs, and a [customized health program](#) should be designed for the individual. This is the true meaning of health care and really fixing the root causes of brain inflammation and reversing its effects.

And although 50 million Americans suffer from autoimmune diseases and brain inflammation issues, mainstream medicine is largely reactive, offering only pharmaceuticals when your problem gets bad enough. There's [very little that's "healthy"](#) about our current healthcare system. Let's start calling it what it is: "disease management" or "sick care system."

We need to start looking at sustainable natural solutions for these chronic brain inflammation and autoimmune problems that could be potentially causing it. But it's also important to know your risk factors early so you can prevent the problems in the first place!

Functional medicine practitioners [are concerned with just that](#). We find the pieces of the autoimmune puzzle and tailor a comprehensive natural health plan to the individual's specific needs.

HOMOCYSTEINE + WHAT IT MEANS TO YOUR BRAIN HEALTH

There's one lab that serves as both a risk factor indicator and an effect of autoimmunity. A simple blood lab called a homocysteine test is one that I recommend for all of my patients around the world, but especially for my patients that suffer from chronic inflammation associated with those symptoms.

WHAT IS HOMOCYSTEINE?

Homocysteine is an amino acid produced in the body. It's normal to have homocysteine, but high levels [are linked to autoimmune conditions](#).

WHAT MAKES HOMOCYSTEINE HIGH?

Stress, poor diet, and toxins can all raise homocysteine levels in the body. A process called methylation is needed to keep your body healthy and homocysteine in check. To have healthy methylation pathways, your body needs beneficial methyl donors, namely B vitamins from the foods you eat, which convert homocysteine to SAMe and glutathione.

SAMe increases the availability of the neurotransmitters serotonin and dopamine, and protects your nerves. Glutathione is your body's strongest antioxidant. Both are essential for putting autoimmune reactions into remission. When your methyl donors are lacking, homocysteine accumulates in the body.

Homocysteine [can also increase with estrogen deficiency](#), and with some long-term medications given to autoimmune patients. Strict vegetarians and vegans [can also be prone to methylation impairments](#) due to a potential deficiency of vitamin B12. These are just some of the factors that can raise homocysteine.

AUTOIMMUNE-HOMOCYSTEINE CONNECTION

Healthy methylation pathways and balanced homocysteine levels protect your DNA. Methylation keeps good genes turned on and bad genes turned off. Conversely, methylation impairment is a key finding in autoimmune conditions, and [can trigger an autoimmune response](#). High homocysteine levels can also be a consequence of poor absorption of B vitamins, which is needed for methylation pathways.

HOMOCYSTEINE + THE BRAIN

Homocysteine levels above 7 UMOL/L [have been shown](#) to damage the protective blood-brain barrier (leaky brain syndrome), and are linked to autoimmune spectrum diseases like Alzheimer's. More than 5.4 million people in the US have Alzheimer's disease, and by the year 2050, [it's estimated](#) that up to 16 million Americans will have it.

Protecting your brain, neurotransmitters, and myelin are key factors in reversing and preventing autoimmune decline. All of these depend on healthy methylation pathways.

HOMOCYSTEINE + THE HEART

High homocysteine levels [are linked with cardiovascular damage](#), and heart disease is the leading cause of death for both men and women. Many autoimmune and inflammation conditions, such as lupus and autoimmune thyroid disease (Hashimoto's or Graves), increase the risk for heart attack and stroke. Protecting the heart is of utmost importance to anyone, especially someone with higher risks.

WHAT TO DO NOW?

Another lab to run in conjunction with measuring homocysteine is a MTHFR genetic mutation test. The more gene polymorphisms you have, the more methylation impairments you're likely to experience, which leads to higher homocysteine levels. This genetic predisposition is found in many autoimmune cases, [such as Hashimoto's](#). Knowing your risk factors is the first step to optimizing your health.

In addition to homocysteine and MTHFR mutation tests, there are [several other labs](#) I recommend for optimal DNA health!

If you have high homocysteine levels or an autoimmune condition, the type of B vitamins you take is important. Be sure to go for the activated forms of folate, B6 and B12:

- L-5-MTHF Folate: Methylfolate
- B6: Pyridoxyl-5-Phosphate (P5P)
- B12: Methylcobalamine

Implementing a [variety of natural tools](#) to promote immune balance is another way to put autoimmune symptoms into remission.

BRAIN INFLAMMATION + ALZHEIMER'S

As mentioned with brain inflammation and testing homocysteine and the role it plays in Alzheimer's disease, it's definitely not something to touch on briefly. With millions of Americans at risk it is something we should be testing specifically to keep a healthy brain.

Alzheimer's disease is now at epidemic proportions. With 5.2 million Americans and 1 in 8 people 65 and over currently living with the condition, Alzheimer's disease is also the sixth leading cause of death in the United States. In 2013, Alzheimer's will cost the nation \$203 billion. This number is expected to rise to \$1.2 trillion by 2050. Despite all that money being spent, there's no accepted cure and no [sustainably effective pharmaceutical drug](#). It is paramount that we realize that with chronic disease as a whole, and specifically with brain conditions like Alzheimer's, that prevention is the best medicine. That's what [functional medicine](#) really offers. We clinically uncover these root cause mechanisms that give rise to chronic degenerative diseases like Alzheimer's disease.

BREAKING YOUR GENETIC CODE

When it comes to family history and genetics, I hear many people say, “Well my mom had this disease, or my dad had that disease,” and they’re unconsciously waiting for the day when the inevitable day comes when they too will be diagnosed with the same disease as their parents. This is an old, outdated view of genetics and one many still believe. This antiquated view that says our genetics are immutable, you are predestined to get whatever disease is in your family history, and there is nothing you can do about it. The science of today takes into account the field of epigenetics, the environmental factors that turn off and turn on your genetic expression. The foods you eat, the nutrients you take, your stress levels, your exercise levels, they are constantly and dynamically instructing your genes what to do.

Research like the [Danish Twin Study](#) has shown that over 90% of how long we live is determined by the choices we make not our genetics. Sure, people can have a genetic predisposition for a disease, or a specific gene for a disease, but that gene can never be expressed if it’s not triggered by these controllable lifestyle factors. This is a revolutionary message of health empowerment and responsibility.

So, what should you do now to assess your risk and potentially change how you’re living your life? Here are the three kinds of tests that everyone should have done to know their risk factors for Alzheimer’s disease that I run on my [patients around](#) the world:

1. FASTING BLOOD SUGAR AND HEMOGLOBIN A1C - In the research, Alzheimer’s has been [referred to as type 3 diabetes](#). The higher your insulin resistance and blood sugar levels are, the more degeneration there is at your brain’s memory center, the hippocampus. Type 1 and type 2 diabetics are twice as likely to get Alzheimer’s because of this reality. When I coach people in reversing their diabetes, their memory inevitably gets sharper, and their brain fog is eliminated.

2. HOMOCYSTEINE AND INFLAMMATORY TESTS - This test, as previously mentioned, is to measure oxidative stress and inflammation in your body. High homocysteine levels [are also linked](#) to a deficiency of B vitamins, which can lead to neurodegenerative diseases like Alzheimer’s.

3. IMMUNOLOGICAL TESTS - Even though Alzheimer’s is classified as a degenerative disease, the immune system plays a significant role in the disease process. There’s an exciting field of research in health called the [cytokine model of cognitive function](#), a scientific way of saying how inflammation and your body’s immune response are linked to brain conditions. One source of [inflammation of the brain](#) has been linked to the foods we eat. Inflammation from foods like grains and certain dairy proteins have been shown to cause brain inflammation and autoimmune responses in the body. These tests are just a starting point, and they certainly are not the only factor that can help you prevent Alzheimer’s disease and lead a healthier life. Once you begin making healthier lifestyle choices, you may find that your well-being improves drastically.

With that being said it's important to point out that prevention is the best medicine and that living to a ripe old age is not a curse, but can be a blessing. Touching on Alzheimer's is key, but we can also discuss other tests in general to keeping a healthy brain to live a long HEALTHY life.

So, is living until you're a healthy 150 years old on the verge of becoming the new norm? Will 200 be the new 70? We live at a time when the concept of living a very long time and even immortality is not just some science fiction concept but actuality in the [scientific literature](#). In our lifetime, some [scientists expect](#) breakthrough [developments](#) in reversing the aging process indefinitely!

Nonprofit organizations like the [SENS Research Foundation](#) are leading the field of regenerative medicine. And instead of these advancements in science being kept for the rich and powerful, the SENS Foundation's mission is to provide it to everyone.

When it comes to genetics and how long we live, many still believe they're predestined to have whatever disease their parents or grandparents had. Like we've discussed, today's science takes into account the field of epigenetics, the environmental factors that turn off and turn on your genetic expression. The foods you eat, the foods you don't eat, the supplements you take, toxins you may be exposed to, your stress levels, exercise and sleep, all of these epigenetic factors are constantly and dynamically instructing your genes what to do.

Referring again to the [Danish Twin Study](#) having shown that over 90% of how long we live is determined by the choices we make, not our genetics. This is a revolutionary message of health empowerment and responsibility. The [Okinawa study](#) showed there is no reason why the majority of us can't live at least 100 disease-free, healthy years.

In reality, there is a lot we can do to actually reverse accelerated aging today. Knowing your bio markers for accelerated aging and disease is the first step of your journey of healthy vitality.

NEUROLOGICAL AUTOIMMUNITY: THE RISE OF AUTOIMMUNE BRAIN PROBLEMS

Millions of people's immune systems are attacking their brain and nervous tissue, and it is drastically under diagnosed. Autoimmune brain diseases like multiple sclerosis, Parkinson's, Alzheimer's and autism are affecting people now more than ever before in human history.

Even Celiac disease can be strictly [neurological](#) in nature leading to anxiety disorders and other brain problems.

New research is looking at how inflammation can damage the brain's protective [blood-brain barrier](#) (BBB) and possibly lead to brain problems.

This inflammation can then activate the brain's immune microglia cells, which can trigger an inflammatory-autoimmune response. In other words, people's immune systems might be attacking their brain and nervous tissue.

THE ANXIETY/DEPRESSION + AUTOIMMUNE CONNECTION

Autoimmune diseases are one of the top causes of death in the United States, but many believe that they're widely under-diagnosed. Why? To be diagnosed with most autoimmune diseases, the immune system has to destroy a significant amount of tissue — in this case, the brain or nervous system — to be officially diagnosed.

There are three main stages on the autoimmune spectrum:

1. Silent Autoimmunity: There are positive antibody labs but no noticeable symptoms.
2. Autoimmune Reactivity: There are positive antibody labs and symptoms.
3. Autoimmune Disease: There's enough body destruction to be diagnosed.

Like the countless other people on the autoimmune spectrum, you may not be sick enough to be labeled with an autoimmune disease, but still damaged by the effects of autoimmune reactivity against the brain.

And that can lead to other problems. In fact, [research](#) has shown that depression and anxiety are more common in patients with autoimmune diseases than chronic degenerative conditions. Researchers suspect this is due to the direct effect of inflammatory cytokines on the central nervous system.

Further, someone with one autoimmune disease has a higher chance of their immune system attacking another system of their body, known as [polyautoimmunity](#). For example, one [study](#) looking at lupus found higher rates of anxiety due to inflammation against the brain.

Keep in mind these studies are with people already diagnosed with an autoimmune disease. So, what about all of those undiagnosed in stage 2 of autoimmune reactivity?

[Functional medicine](#) doesn't want to wait until someone's health declines enough to be labeled with a disease and so they can then be matched with a corresponding drug. Instead, autoimmune reactivity should be ruled out first.

Here's when you might want to consider autoimmune reactivity as the culprit:

- You have a family history of autoimmune conditions.
- You have a family history of mental health problems.
- You've been diagnosed with an autoimmune disease.
- You're not improving with medications or behavioral therapy.

So, what now? If you suspect autoimmune reactivity might be leading to depression and anxiety issues there is hope and options. As we will cover next there are many tests you can have done!

LABS TO HAVE DONE: UNDERSTANDING YOUR BRAIN, HEALTH, AND GENETICS

Knowing these ranges, understanding your health, and knowing what steps to take can make all the difference in the length and quality of your life. Brain inflammation does not have to be a way of life. These labs give us a comprehensive look at all aspects of your brain health.

1. TELOMERE LENGTH

Telomeres are the ends of your chromosomes that are responsible for healthy cell function. As time passes, telomeres become shorter, which leads to aging and chronic disease. A lot of regenerative medicine research is focused on the regeneration of telomere length. By clinically looking at your telomere lengths you can gain insight into how rapidly or slowly your body is aging.

2. C-REACTIVE PROTEIN

This inflammatory protein is essential for cleaning up bad bacteria, but in excess can lead to accelerated aging, chronic disease, and [damage to telomeres](#).

Optimal Range: < 0.5 mg/L

3. SMALL DENSE LDL PARTICLES

LDL is typically called “bad cholesterol” but this is a simplistic and inaccurate view of cholesterol. LDL particles – protein carriers which carry cholesterol around in your body – can be both large buoyant or small dense. Small dense LDL particles can cause damage, and it’s these particles – not the cholesterol itself – that [indicate a risk](#) for heart attack and stroke.

Optimal Range: < 200 nmol/L

4. HOMOCYSTEINE

This protein in excess (and with a B vitamin deficiency) [has been linked](#) to cognitive decline.

Optimal Range < 7 Umol/L

As we talked about previously, this is key in understanding the risks of where your chronic brain inflammation may be at.

5. HGB A1C

This 2-3 month average A1C level in blood sugar [has been linked](#) with higher rates of all-cause mortality in patients with diabetes.

Optimal Range: < 5.3%

6. VITAMIN D

This nutrient is responsible for hundreds of different genetic pathways in the body. Vitamin D deficiencies are linked to chronic disease, and optimal levels are [linked to an actual preservation of our telomeres](#), the part of your chromosomes that maintain our youth! Vitamin D should be paired with other fat-soluble vitamins, like vitamin A and K2.

Optimal Range: 50-60 ng/mL

7. FASTING INSULIN

When your body breaks down carbohydrates, and to a lesser extent, proteins into glucose, your pancreas secretes insulin to bring down your blood sugar. High levels of insulin in the body [has been linked to accelerated aging and telomere shortening](#).

Optimal Range: < 3 uIU/mL

8. CONDUCT COMPREHENSIVE GLUTEN LABS

Basic gluten labs only test for alpha-gliadin antibodies. This is just one of about 24 different aspects of wheat that your body may be reacting against. A [comprehensive wheat and gluten array](#) will uncover different intolerances you may be experiencing.

9. CONDUCT FOOD REACTIVITY LABS

Other [gluten-free proteins](#) can mimic gluten. Or, you might also be having a separate food reactivity — what is generally healthy for someone else may not be for you.

10. CONDUCT A BLOOD-BRAIN BARRIER LAB

Labs are available to assess blood-brain barrier permeability, which can contribute to a number of brain health problems.

11. AUTOIMMUNE REACTIVITY BRAIN LABS

These blood labs can look for raised antibodies, including [GAD antibodies](#), which attack the enzyme used to make the calming neurotransmitter GABA.

12. MICROBIOME LABS

Your gut is your “second brain,” where 95% of your “happy” neurotransmitter called serotonin is made. [Leaky gut syndrome](#) and SIBO, or small intestinal bacteria overgrowth, are both associated with many autoimmune brain conditions.

13. FOOD-IMMUNE REACTIVITY LABS

Sugar and dairy are some common autoimmune [food triggers](#), but I’ve also seen the healthiest plant foods be immunoreactive in some patients. The diet that works for one person may not be right for you — and labs can help cut through the autoimmune food confusion.

14. PREDICTIVE AUTOIMMUNITY LABS

Another contributing factor I often see in my patients is raised antibodies against the adrenal glands, which this lab looks for. I also see depression and anxiety issues with undiagnosed [auto-immune thyroid problems](#) Hashimoto’s or Graves’ Disease. Knowing your antibodies can give you insight into why you feel the way you do.

With these indicating factors and tests in place it gives you a better opportunity to not only understand your health, but put in motion efforts to reverse that inflammation.

WHY YOUR IMMUNE SYSTEM PLAYS A VITAL PART IN YOUR BRAIN INFLAMMATION

With these indicating factors and tests in place it gives you a better opportunity to not only understand your health, but put in motion efforts to reverse that inflammation.

When dealing with brain inflammation and promoting brain health, you will also be able to boost your immunity. From vaccinations at your doctor's office to that bottle of echinacea at the health food store, a lot of health care is [centered on your immune system](#). But why exactly should you care about your immune health?

The immune system is the body's sophisticated defense against disease. It's what keeps you from getting a cold when everyone else in the office has one, and it's also what keeps cancer cells from spreading throughout your body. From colds to cancer, your immune health is essential to whether or not you thrive in life. With the epidemic [rise of chronic and autoimmune diseases](#), your immune health is pretty important, wouldn't you say?

For ultimate immune health you need ultimate brain health. Your brain is one of the major players in your immune health, and not many people talk about the connection between the two. Instead of masking symptoms, functional medicine is concerned with the underlying mechanisms that give rise to health problems like a weak immune system.

I want to show you how supporting your brain health can directly help you build a strong immune system. To do this, let's first go over the two major ways your brain controls your immune system:

BRAIN-IMMUNE AXIS

Your brain-immune axis is an important connection for your ultimate health. I know many patients who started having severe immune dysfunctions and autoimmune conditions following a head injury in a car accident. But why? One [study in the Journal of Neuroimmunology found](#) that the cerebellum played a substantial role in modulating helpful immune cells.

Similarly, a [study in the Journal of Nuclear Medicine found](#), via brain mapping, the cerebellum playing a role of attempting to bring immune function in cancer patients! In addition to the cerebellum, your brain's cerebral neocortex [was found](#) to be another key player in the brain-immune axis.

GUT-BRAIN AXIS

I've [written in the past](#) about how the communication between your microbiome and brain (gut-brain axis) is a pivotal system in understanding your overall health. Your gut is even referred to as your second brain, and physically they even resemble each other! Around 80% of your immune system is found in the gut, and 95% of your serotonin, the feel-good neurotransmitter, is made and stored in the intestines.

As the gut affects the brain, the opposite is also true. The brain [has been shown](#) to [regulate gut mucosal immunity](#).

HOW TO SUPPORT YOUR BRAIN + IMMUNE HEALTH

Since everyone is different, so are your needs. While there are many specifics to consider, here are four things I look for in just about everyone when addressing the brain-immune-gut connections:

1. HEALTHY METHYLATION PATHWAYS

Methylation is sort of an antioxidant recycling process in your body. It's needed for optimal brain and immune health. Proper methylation produces your body's top disease-fighting antioxidant, glutathione. When your glutathione levels are low, so is your immune system.

What depletes glutathione?

- Toxins
- Antidepressants
- Birth control pills
- Diabetic medications
- Antacid medications
- MTHFR gene mutations

I gauge methylation function in patients by running a lab called homocysteine. If those previously as for mentioned homocysteine levels are high, methylation isn't functioning well.

The good news is that in the presence of methyl-donors like vitamin B6, homocysteine is converted to glutathione!

2. VITAMIN D

The sunshine vitamin is crucial for brain and immune health. It's responsible for many different [brain-immune pathways](#), and low levels are linked to autoimmune conditions and poor immune health. Optimal vitamin D levels should be around 60-70 ng/mL for most people and for those with autoimmune conditions.

3. INFLAMMATION

Chronic inflammation is one of the major underlying culprits of chronic disease, but healthy inflammation levels fight off disease!

To support healthy inflammation levels, it is essential to support your brain's neurotransmitter, acetylcholine. Healthy acetylcholine activity [has been shown](#) to produce optimal nitric oxide balance.

Nutrients like [huperzine A](#) and [adenosine triphosphate have been shown](#) to activate this pathway. Providing [my patients with condition-specific amounts](#) of these nutrients helps support this brain function.

4. MICROBIOME HEALTH

For a healthy immune system, you need to have a healthy microbiome. You don't have to have gastrointestinal symptoms to have an underlying gut problem. Underlying conditions like "leaky gut syndrome" can have a major impact on your immune system.

Having optimal brain-immune-gut axis function is a crucial way to optimize your immune system!

YOUR GUT MICROBIOME + YOUR BRAIN HEALTH

Your gastrointestinal system, which is comprised of your stomach as well as your small and large intestines, is [home to over 100 trillion bacteria, collectively called the microbiome.](#)

Just to give you an understanding of how vast your microbiome is, there are 10 times more bacterial cells than human cells in your body. Your gut also has just under 3.3 million bacterial genes, which is more than 150 times as many as reside in your own genome!

The microbiome acts as our second set of genes, with each one of us falling into a specific microflora type, similar to blood types. This radical new understanding in science, that our bodies are symbiotic hosts for the microbiome, has dramatically shifted the way we view disease, hygiene, and health.

The delicate balance of your gut ecosystem determines how you look, think, and function. This primordial life in your gut is what makes up 80% of your immune system and what also has the power [to turn off and on good and bad genes.](#) Now you can see the far-reaching implications of your microbiome health and what that ultimately means for your brain health.

For example, your [weight](#) and your [brain function](#) are affected by your microbiome. [Cancer, type 2 diabetes, allergies,](#) and [asthma](#) all have a microbiome component to them. Microbiome and gut lining distress [are associated with autoimmune conditions.](#)

SO HOW DO YOU MAXIMIZE YOUR MICROBIOME?

1. AVOID THE JUNK.

This is hopefully a no-brainer (no pun intended). For a healthy microbiome, I would start with avoiding processed foods, which will bring down inflammation to your protective gut lining and stop damage to your gut flora. Limiting antibiotics and NSAIDs is essential for this reason as well, but there are plenty of [steps you can take to maximize your microbiome's health.](#)

2. CONSIDER DIAGNOSTIC TESTING.

[Comprehensive labs](#) pinpoint exactly what's going on in an individual case. Clinically measuring and analyzing your microbiome will give you insight into your health. Looking at gut lining integrity (leaky gut), food sensitivities, and chronic yeast, fungus or parasitic infections as well as small intestinal bacterial overgrowth (SIBO) is essential to address your specific microbiome problems.

3. EAT LIVE FOOD.

With every meal you are determining your microbiome's health and in return, your own. "You are what you eat" is now "You are what your microbiota eats." Eating a variety of plant food grows a good gut garden. But what works for one person doesn't mean it will for you. For example, people with SIBO (small intestinal bacterial overgrowth) or IBS tend to do better with avoiding food high in FODMAPS (Fermentable Oligo-, Di-, Monosaccharides And Polyols), such as onions and garlic, which can aggravate the underlying problem.

4. EAT FERMENTED FOODS.

Fermented foods like sauerkraut, kimchi, or kefir can be a great way to recolonize your gut with beneficial bacteria, although some cases of dysbiosis don't do well with these foods. Again, make diagnostic testing an important part to finding out what is best for you.

5. USE NATURAL MEDICINE.

L-glutamine, slippery elm, marshmallow root and deglycyrrhizinated (DGL) licorice are all [some great natural ways](#) to aid in repairing the protective lining of your gut.

ADVANCED PROTOCOLS

I've found many cases respond well to condition specific intermittent fasting protocols where the patient restricts food for a time being and uses different healing tools to give the gut time to heal and reset the microbiome. Fecal bacteriotherapy, in which a patient receives a fecal transplant from a healthy donor, can also reset a very sick or weight-loss-resistant individual's microbiome. It might sound too gross for some, but I've seen therapies like this do wonders for people's health when they haven't been able to find relief elsewhere.

When our society is experiencing an epidemic of chronic brain problems these tools can be crucial. There are many things we can also add to list not just to help the gut and brain axis, but help the brain in general.

FOOD MEDICINES FOR IMPROVING BRAIN HEALTH

An estimated 40 million people in the United States [experience some sort of anxiety-related disorder](#). As many as [30 million suffer from depression](#).

The use of antidepressants doubled from 1995 to 2005, and they're now the [most prescribed drugs](#) on the market. There's been a twentyfold increase in attention-deficit drug consumption over the past 30 years. Autism now affects [1 in 88 children](#). From anxiety, attention-deficit disorder (ADD), and autism to brain fog, dementia, depression, and mood swings, one thing is clear: we have a rapidly growing mental health problem.

Depression is now the [leading](#) cause of disability worldwide. And Alzheimer's disease is the sixth-leading cause of death in the United States.

In fact, a 2013 report found that since 1979, deaths due to brain disease have increased 66% in men and a whopping 92% in women.

What is the mainstream medical system's answer? As with most chronic conditions, its solution is to diagnose a disease or condition and match it with a corresponding pharmaceutical drug. In [functional medicine](#), my goal is to clinically investigate the underlying, unlooked, and uninvestigated factors that are at play in chronic health issues such as these and to naturally address them. Obviously, conditions like these are complex, and there's no easy answer. Below, I've laid out some great pieces of the puzzle for optimal brain health. They're a great starting point, and are not intended to be quick fixes.

The tips and tools below are not your ordinary, run-of-the-mill advice that you've heard a million times. Most people know they should be eating more vegetables; that's a given. I wanted to give you the best, fresh plan for promoting a healthy brain, and to push you out of your comfort zone and into optimal health:

1. EGGS

This incredible, edible superfood is one of the most unjustly and inaccurately persecuted foods, ever! The yolk of the egg gets a particularly bad rap, but the yolk contains the majority of the egg's nutrients. I see so many well-intentioned people throw out the yolk or buy egg whites because they're fat-phobic.

From a health perspective, this is very misguided. The yolk is so rich in nutrients for your brain that a separate article could be devoted to the topic. The yolk is truly nature's multivitamin. Organic, pastured eggs from chickens who roam outside in the sunlight offer us essential brain food like choline. [Choline has a variety of functions](#) for healthy brain function, including the synthesis of the neurotransmitter acetylcholine, and cell-membrane signaling, which is needed for all hormone function. Symptoms of choline deficiency include fatigue, insomnia, and memory problems. Pastured egg yolks are also rich in omega-3 fats which are essential for a healthy brain.

As with all meat and dairy, not all eggs are created equal. Pasture-raised eggs have been shown to contain three times more of the brain beneficial omega-3 fats than supermarket eggs!

2. ORGAN MEATS

A second real food multivitamin is organ meat. Powerhouse superfoods, like liver, have been consumed by abundantly healthy societies throughout history, but now are eaten sparingly in modern Western society. The liver is a storage organ for many important brain nutrients, like vitamins A, D, E, K, B12, and folic acid, and minerals such as copper and iron. A great way to get these nutrients is through a liver pate. Fermented cod liver oil is also a great option, and comes in different forms like gels and capsules if you want to take it in a whole-food supplement form.

3. BONE BROTH

To have a healthy brain, you need to have a healthy gut! The two are inextricably linked through nerve pathways. It's no coincidence that your gut is also called "The Second Brain:" 95% of your serotonin, your feel-good hormone, is made and stored in your gut. Conditions like [leaky gut syndrome](#) and small intestinal bacterial overgrowth (SIBO) can have damaging effects on your entire body. The connection between your gut and your brain (gut-brain axis) has been linked to depression, anxiety, and [autism](#). Bone broth is one of the best foods you can consume for a healthy gut. This nutrient-rich liquid is filled with collagen, which acts like a healing ointment to a stressed-out inflamed gut.

4. COCONUT OIL

This amazing food can do wonders for your brain health. A [study in the journal Neurobiology of Aging](#) suggested that medium-chain triglycerides, like those found in coconut oil, improved cognitive function among older folks with memory problems and Alzheimer's disease. The amazing thing in this research was that cognitive function was improved almost immediately following ingestion of the medium-chain triglycerides!

5. GRASS-FED DAIRY

Your brain is made up of [60% fat](#) and contains more cholesterol than any other organ in your body, yet we were raised to avoid these two essential brain nutrients. In addition to this, the cell membranes of our body, where your hormones communicate, are lined with the same components of saturated fat and cholesterol. That's why it's important to acquire these nutrients through your diet, and high-quality dairy is a good way to do that.

Dairy should always be grass fed, organic, and preferably raw. Fermented dairy like kefir is also a good option. The healthy fats of grass-fed dairy are where all the brain food is, so avoid low fat! Two fats that your brain wants and needs are saturated fats and arachidonic acid, both of which can be found in grass-fed dairy. Another nutrient your brain craves is vitamin K2, which is critical for the formation of the myelin sheath and the nerves in the brain. We get this power nutrient from the fat of grass-fed animals, the very food that's disappeared from our modern low-fat diet.

6. SUNLIGHT

It's no secret that a lot of people are deficient in vitamin D. Our culture lathers up with toxic sunscreens and avoids the sun like the plague. But moderate sun exposure is healthy for most people. Vitamin D has many jobs, and one of them is its critical role in making your endorphins.

If you live in places that don't always have strong sunlight, or if you work inside a lot, then get your vitamin D from the foods you eat. When we consume the dairies and fats listed above, from animals who live outside in the sunlight, they will have plenty of [vitamin D in their fats](#).

7. LOOK INTO NATURAL AUTOIMMUNE MEDICINES.

Supporting your Regulatory T Cells to balance the immune system and TH-3 activity, which suppresses autoimmunity, can both be very effective. Studies suggest that optimizing vitamin D and intracellular [glutathione levels](#) with supplementation can help with this.

The same goes for supplements of [curcumin](#) and [resveratrol](#), which are two natural ways to dampen inflammatory TH-17 cells in autoimmune cases. For more tips, check out [10 Tools To Start Reversing Your Autoimmune Disease](#).

8. CONSIDER FUNCTIONAL MEDICINE.

There are many variables to consider and everyone is different. There are no quick fixes or magic pills when it comes to autoimmune brain problems. Consider taking advantage of a [free evaluation](#) to see if functional medicine is right for you.

As I've said earlier, these are pieces of the puzzle to regain your health, not the entire picture. Hormonal imbalances, food intolerances, chronic infections, toxicity, and nutritional deficiencies are all factors that need to be investigated for the individual. [A comprehensive health program](#) tailored for you and your unique needs will be necessary to create sustainable results. We hope this guide has helped through a complete understanding of why your brain health is important, the specific diseases we need to avoid getting, what tests need to be run in educating yourself, and the tools to begin to regain or keep your happy healthy brain! We think your brain deserves that kind of care and are happy to help if you decide to take your treatment farther!

We coach people all around the world through our virtual Functional Medicine clinic. Phone and webcam consultations offer people personalized natural healthcare wherever they are. Take advantage of our [free evaluation](#) to get your questions answered and to see if [Functional Medicine](#) is right for you.

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