

## Autoimmune Disorders: When Your Body Turns On You



CATHERINE GUTHRIE ([HTTPS://EXPERIENCELIFE.COM/AUTHOR/CATHERINE-GUTHRIE/](https://experiencelife.com/author/catherine-guthrie/)) · OCTOBER 2013

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Illustrations by Jude Buffum

**There's been a stark rise in autoimmune disorders over the past 50 years, from type 1 diabetes and multiple sclerosis to celiac disease and asthma. The first step toward a cure is understanding and controlling the causes.**

Your immune system is your security detail. It is hardwired to differentiate between what belongs in your body and what doesn't. When it spies a meddler, such as a virus, bacterium, or parasite, it shoots to kill.

Unfortunately, the system is not perfect. Sometimes it targets healthy tissues, a situation that, if it persists under certain circumstances, can lead to an autoimmune disease or autoimmunity.

"Auto" mean self; so, "autoimmunity" basically means your immune system takes aim at itself.

More than 23 million Americans suffer from autoimmunity, which makes it the third most common category of illness in the United States after cancer and heart disease. Yet, 90 percent of Americans cannot name a single autoimmune disease, writes Donna Jackson Nakazawa in her book *The Autoimmune Epidemic* (<http://astore.amazon.com/experilifemag-20>)(Simon & Schuster, 2008). "It boggles the mind," she says. The name deserves some of the blame. "Autoimmune disease" is an umbrella term for dozens of conditions, most of which do not actually use the word "autoimmune" in their titles.

Some of the most common autoimmune diseases include rheumatoid arthritis, type 1 diabetes, lupus, Hashimoto's thyroid disease, multiple sclerosis (MS), inflammatory bowel disease (IBD, which includes Crohn's disease and ulcerative colitis), celiac disease, and asthma. The National Institutes of Health (NIH) currently labels more than 90 diseases as autoimmune disorders, and that number is certain to rise as scientists continue to identify and further understand the origin of other diseases. Type 1 diabetes, for example, was only recently found to be autoimmune driven. (For a list of more autoimmune diseases, see "Autoimmune Diseases...So Far" below.

At first, the medical establishment more or less missed this epidemic because specialists who rarely talked to one another treated individual diseases in a vacuum, says Nakazawa. Patients suffering from joint problems, like rheumatoid arthritis and lupus, typically saw rheumatologists; those with skin issues, like psoriasis, went to dermatologists; gut disorders, like Crohn's disease, ulcerative colitis, and irritable bowel syndrome, fell under the jurisdiction of gastroenterologists; and so on. "There was no one standing on the mountaintop saying, 'Wow, look what's happening in all these valleys,'" Nakazawa says.

The system is catching up to the problem and adapting its protocols, though. One catalyst for the change is the ever-widening scope of the problem. Since the 1950s, celiac disease alone is up fourfold, lupus rates have tripled, and type 1 diabetes (<http://experiencelife.com/newsflashes/dads-weight-can-affect-childrens-risk-of-diabetes/>) has soared — up 23 percent in the past decade alone.

Today's doctors and scientists also have a more sophisticated understanding of how the immune system can go awry. One of the top experts in the field is Alessio Fasano, MD, the director of the Center for Celiac Research & Treatment at Massachusetts General Hospital for Children in Boston. Decades of research led him to deduce that every autoimmune disease has three basic ingredients: a genetic predisposition, an environmental trigger, and a leaky gut.

Identifying the first two components was easy. Scientists have long known that autoimmunity runs in families and that onset of some disease can be triggered, for example, by an environmental factor such as an infection. But it wasn't until 2000 that Fasano and his team discovered the third and final ingredient — a leaky gut. Specifically, Fasano discovered zonulin, a protein that regulates gut permeability.

"Zonulin works like the traffic cop of our bodies' tissues," he says. "It opens the spaces between cells, allowing some substances to pass through while keeping harmful substances out." Some people produce excess amounts of zonulin, which pries apart the cells of the intestinal lining and allows toxins, [bacteria](http://experiencelife.com/article/good-bacteria-welcome/) (<http://experiencelife.com/article/good-bacteria-welcome/>), and undigested bits of food into the bloodstream — hence the term "leaky gut."

While functional- and integrative-health practitioners have long said gut permeability is the crux of chronic ills, including autoimmune disorders, many conventional physicians distanced themselves from the idea. The science behind gut permeability, however, is now too convincing to ignore.

The leaky gut is especially important in any conversation about autoimmune disorders because it's the thing that allows environmental factors to trigger predisposed genes.

### THE GENE TREE

Family history accounts for roughly one-third of the risk of developing an autoimmune disease. Certain clusters of genes can directly affect the [immune system](http://experiencelife.com/newsflashes/how-forests-boost-immunity/) (<http://experiencelife.com/newsflashes/how-forests-boost-immunity/>), making it hyperreactive. Other genes play an indirect role by exposing an organ to attack.

Although the science of genetics and autoimmunity is in its infancy, researchers have discovered a combination of genes called human leukocyte antigens (HLA for short), which may determine who develops an autoimmune disease and who does not. In short, it is most important to understand that genes determine how sensitive your immune system is to environmental triggers.

#### TOXIC INVADERS

Some toxins alter the structure of our DNA, which can prompt the immune system to see the mutated tissue as a foreign substance and attack.

The surge of autoimmunity paralleled the growth of consumer products made from plastics, artificial fibers, and synthetic dyes. There are now more than 80,000 chemicals used in commercial products, and less than 15,000 of those have been safety tested (much less tested in frequently used combinations). According to consumer advocates at the Environmental Working Group, the average person is exposed to more than 126 chemicals before even leaving the bathroom in the morning (shampoo, conditioner, toothpaste, soap, deodorant, sunscreen, etc.).

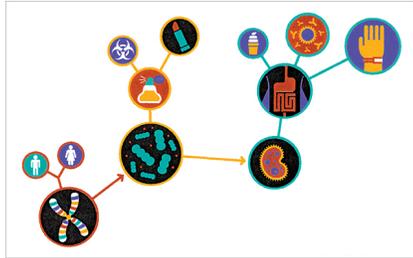
Chemicals in [personal-care products](http://experiencelife.com/article/beauty-beware/) (<http://experiencelife.com/article/beauty-beware/>) might be one reason that the majority of autoimmune sufferers — 78 percent — are women. Nakazawa thinks it is only a matter of time before scientists connect the dots between the gender difference in autoimmune diseases and endocrine disruptors in women's personal-care products, such as phthalate esters and parabens in things like lotion, perfume, and sunscreen.

Studies are under way to pinpoint which chemicals are most egregious. One that comes up again and again is mercury, which can trigger autoimmunity by ramping up the production of lymphocytes, a type of white blood cell in the immune system.

Additionally, the NIH is researching whether a protein in cow's milk may help trigger type 1 diabetes in genetically susceptible children.

Infections can also cause autoimmunity. Certain infections, such as group A beta-hemolytic streptococcus, spark the onset of rheumatic heart disease, an autoimmune disease that attacks the heart. Infections may also kick off type 1 diabetes, MS, lupus, and rheumatoid arthritis.

#### GUT CHECK



You might be genetically susceptible and be exposed to a host of environmental triggers, but in most cases you won't develop autoimmunity unless you also have a leaky gut.

The gut's slick, slimy insides, if spliced and laid flat, would carpet a tennis court. The uppermost lining is a mere one cell thick and is home to trillions of bacteria. In a healthy gut the good bacteria outnumber the bad. But keeping a healthy ratio is tough. Years of eating junk food, popping pain relievers, and experiencing stress inflames the gut's lining.

Everyone's gut can spring a leak from time to time. A leak can form after an infection, a virus, or gastric upset.

Some people have symptoms, like bloating, gas, or indigestion. If the gut is healthy, the lining will heal. But if the gut is in bad shape, it may not be able to close the fissures.

Inside a leaky gut, zonulin opens the door for bacteria, viruses, fungi, parasites, chemicals, and pollutants to enter the bloodstream. Confronted with a steady stream of invaders, the immune system makes T helper cells, which speed up its response.

"Humans evolved over 2.5 million years, during which time our immune system was designed to attack one enemy: infection," says Fasano. "Now the same machinery is forced to fight thousands of enemies it has never seen before."

Not every leaky gut will lead to an autoimmune disease, but if you are genetically predisposed, the fight can be very dangerous. Substances produced by T cells can irritate and inflame the body and indirectly activate genes capable of triggering autoimmunity.

#### EAT TO HEAL

The body's capacity to withstand autoimmunity is like a barrel's capacity to hold water, says Nakazawa. The body's barrel is half filled with factors you can't control, like your gender and your genes. The other half is filled with things we can control, such as how many chemicals we put in our bodies.

A healthy diet creates a healthy gut. It protects your body from autoimmunity. "When you heal your gut, you automatically lower what's in the barrel," Nakazawa says.

Functional-medicine pioneer Mark Hyman, MD, calls the gut the "inner tube of life" and offers seven steps to keep it happy and healthy:

- **Eat whole unprocessed foods**, like vegetables, beans, nuts, seeds, and whole grains.
- **Pinpoint food allergies**. For two weeks, cut out gluten, dairy, yeast, corn, soy, eggs, and other highly allergenic foods, and see how you feel.
- **Curb infections and bug overgrowth**. Parasites, small bowel bacteria, and yeasts can hurt gut function. Find a healthcare practitioner who can help you clear up these underlying problems before they get out of hand.
- **Reseed your inner ecosystem** with prebiotic and probiotic-rich foods, like plain yogurt, sauerkraut, kimchi, kefir, etc.
- **Boost your digestive enzymes**. Without enough enzymes, the gut can't break down food into the nutrients your body needs. Taking a broad-spectrum digestive-enzyme supplement with your food can help.
- **Eat good fats**. Specifically, studies show omega-3s protect against autoimmunity by reducing inflammation and helping heal a leaky gut.
- **Plug any leaks**. Gut-healing nutrients, like glutamine and zinc, help repair the gut's lining so that no more nasties can slip through.

#### EARLY INTERVENTION

If you suspect you have an autoimmune disease or if you are at high risk, ask your doctor for an ANA (antinuclear antibody) test. The immune system makes antibodies to fight infection. An antinuclear antibody is one that attacks your own tissue. Antinuclear antibodies in your blood can be a red flag that an autoimmune disease is around the corner.

The test does lack precision. False positives are routine, and even when the test is accurate, it can't tell you what disease you're in for. Will your autoimmunity attack your joints? Your [thyroid](http://experiencelife.com/article/repair-your-thyroid/) (<http://experiencelife.com/article/repair-your-thyroid/>)? Your skin? “Unfortunately, the gut is not like Las Vegas,” says Fasano. “What happens in the gut doesn't necessarily stay in the gut.”

To provide patients with a more exacting diagnosis, the medical community is now working to identify disease-specific antibodies. Thus far, scientists have pinpointed antibodies for lupus, rheumatoid arthritis, multiple sclerosis, and even type 1 diabetes. The tests are the closest thing in medicine to a crystal ball. Your physician can identify the earliest whiffs of a disease, meaning you can take action to turn things around. “The goal is to find people who are on the road to an autoimmune disease and short-circuit the process,” says David M. Brady, ND, director of the Human Nutrition Institute at the University of Bridgeport in Connecticut and a functional- and nutritional-medicine practitioner.

“The science is powerful but imprecise,” Fasano cautions. “Someone can test positive for antibodies, but it's anyone's guess *when* the disease will appear.” That kind of moving target, especially for a serious disease such as type 1 diabetes, can make treatment harder to determine and access.

Brady and other functional-medicine practitioners are hopeful, though. “We don't go from health to an autoimmune disease overnight,” Brady says. “We progress over years until there is a tipping point.” (Picture your personal barrel of water here.)

Brady goes on to point out that simple lifestyle interventions, like taking probiotics, getting plenty of vitamin D, and reducing stress (cortisol weakens the stomach's lining), may be enough to heal or prevent leaky gut. The upshot? A healthy gut means there is no bridge between your genes and your environment.

“If we can intervene early,” Brady says, “we can make some strong inroads in treating and preventing these diseases.”



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