



## **Learning More about** **Leaky Gut**

**The adage “All disease begins in the gut” has been attributed to Hippocrates – and 2000 years later – many doctors are looking closely at this idea.**

*To understand the idea of intestinal permeability, aka leaky gut, we need to understand how the GI functions in relation to our health.*

An analogy I often use is to imagine our GI tract as a tube of the outside world that we are wrapped around.

After we ingest things from our external world, we break down and absorb the nutrients and then expunge the waste products to our GI tract, which has the job of excreting them from our bodies.

However, it is not only nutrition that comes through our mouth and goes through our GI tract.

**For example, let’s think of an apple.**

Even though we get the nutrients from the apple, we also eat the wax on the skin and possibly bacteria, viruses, and parasites.

## **But what about something more processed?**

If we eat a cookie or chips or any of the vast array of “middle aisle” foods, we may possibly get some nutrition. Still, we are also getting the inflammatory oils/fats, sugars, salt, chemicals, food coloring, and other chemicals meant to make the food more appealing to us.

Additionally, we will also get the bacteria, viruses, and parasites as even processed food is not sterile.

## **Our amazing and complex GI system does this!**

Our small intestine contains a mixture of pancreatic digestive enzymes, bile, stomach acid, and cholecystokinin that work together to break down food in this way.

- Assesses nutrition and breaks that down into small individual components while keeping out other chemicals and microbes.
- It breaks proteins down into single amino acids, fats into fatty acids, and starches into sugars.
- This process enables our body’s receptors to find the proteins and bring them into the body.

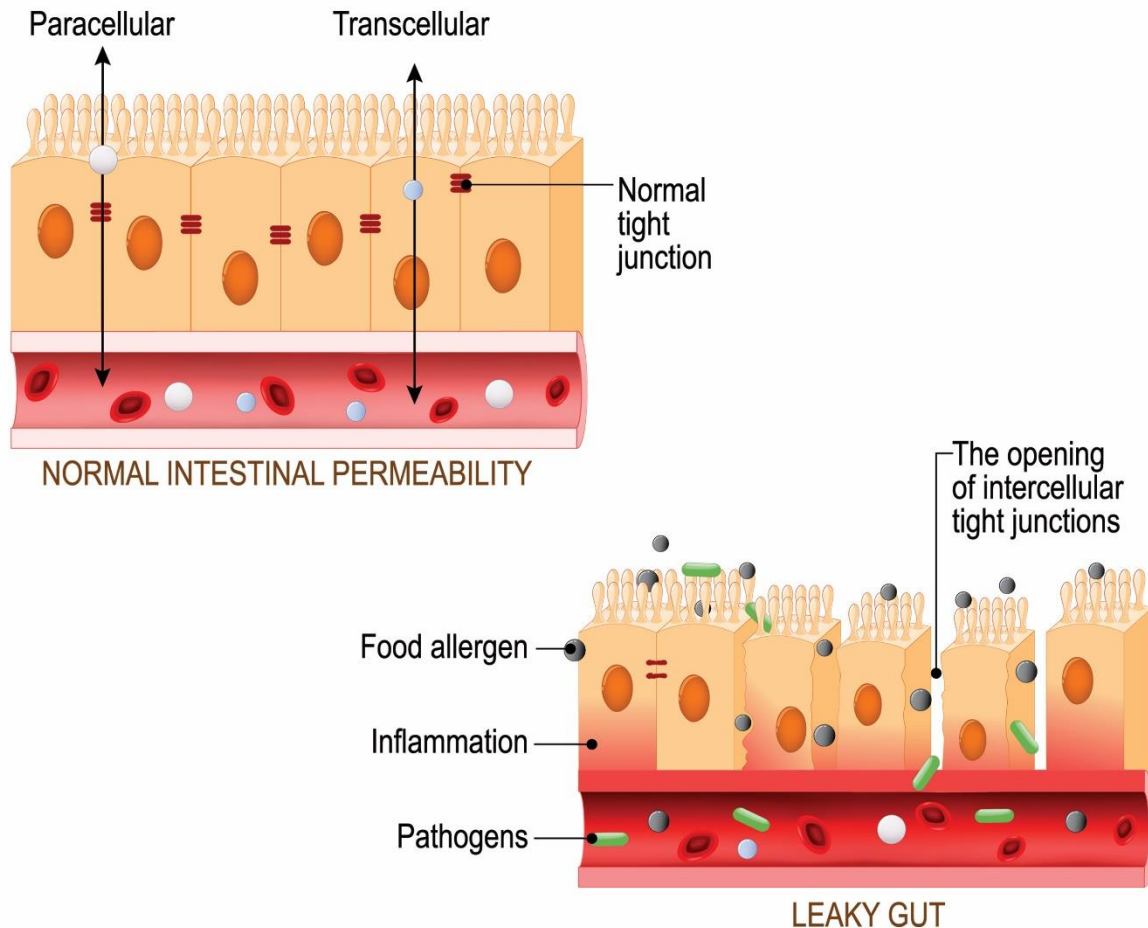
**NOTE:** Our intestine is only one cell thick, which means this one cell is all that separates our food and, ultimately, our fecal matter from our blood.

**FOR COMPARISON:** The skin on our arms and legs is several cells thick.

The intestines have evolved to a complex system of molecules between each cell, holding them together like Velcro to efficiently complete this process. These are called “tight junctions.” These tight junctions ensure that only the nutrients enter our bloodstream. Everything else is kept out and eventually excreted in our stool.

However, sometimes the tight junctions get loose (when something breaks through), and this becomes intestinal permeability which may then allow harmful substances, and partially digested food, to enter the bloodstream at higher levels than our bodies can often manage while also reducing the absorption of essential nutrients necessary for health.

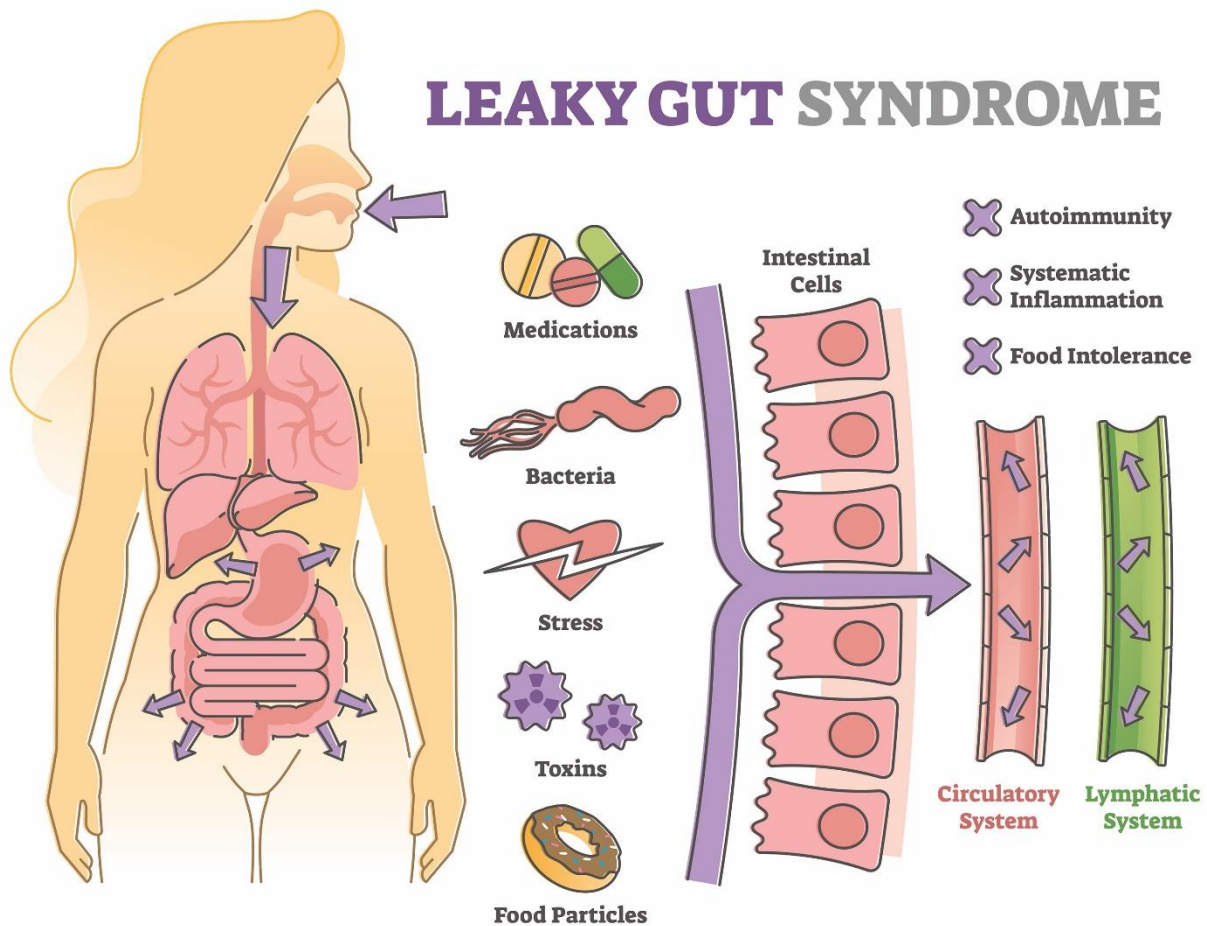
# Increased intestinal permeability



70% of our immune system is in the lining of our intestine, working diligently as a guard to identify and remove any “foreign” microbes or molecules that may sneak between the cells.

Then it is the immune system’s job to identify and eradicate these foreign transgressors and heal these tight junctions. Our immune system is very black and white and only sees things as safe or not safe.

# What things will cause this intestinal permeability?



## The list is extensive and includes:

- Bacterial infections (Salmonella, E Coli, etc.)
- Food allergies
- Environmental allergies
- Antibiotics and other medications
- Inflammation
- Mycotoxins
- Heavy metals
- Illnesses
- Lack of sleep
- Stress
- Gluten (even in a non-celiac individual)

**Those who develop chronically “leaky gut “or intestinal permeability may experience the following symptoms, to name a few:**

- Food sensitivities
- Food allergies
- Diarrhea
- Brain fog
- Rashes
- Acne
- Headaches
- Inflammation

Additionally, some studies show that increased intestinal permeability may be an underlying cause of migraines, depression, and various autoimmune diseases, such as Celiac disease and rheumatoid arthritis.

We also believe that autoimmune disease may also start in the gut with this type of intestinal permeability, allowing these foreign molecules to come between the cells activating your immune system, and then creating many 100s of antibodies in response.

Through the process of molecular mimicry, these antibodies can look like tissues, such as your joints, your thyroid, your nerves, and start to “fight” the various tissues causing damage to these areas.

## **So how do we treat this?**

This is complicated as each individual is different, and in Functional Medicine, we offer a personalized approach to all health issues.

### **In short:**

- First, we identify if there is some permeability going on and look for antibodies.
- Then we sort out each individual’s trigger or triggers that might have led to this.
- Finally, we address each of these triggers in their unique way.

However, the standard protocol developed by Jeffrey Bland, co-founder of the Institute for Functional Medicine, relies on the 4R-6R program. This is:

- **Reduce** by taking steps that reduce your symptoms.
- **Remove** all foods that cause any adverse effects on the body.
- **Restore** what is lacking.
- **Repair** by helping the lining to heal by supplying essential nutrients.
- **Reinoculate** by getting the good bacteria repopulated.
- **Rebalance** by getting adequate sleep, reduce stress, and continue with a healthy regimen of nutrition and exercise.

These six steps will be personalized for each patient as no two people will have the exact reasons for developing intestinal permeability.

