CYREX Laboratories

BiomeBurden™ Complete

Patient Education Guide

Introduction

Your doctor may have recommended the **BiomeBurden™** blood test if you're experiencing symptoms related to gut or immune imbalance. This test reveals how your immune system is reacting to microbes like fungi, bacteria, and yeasts—offering insight into possible sources of inflammation or chronic immune stress.

- Fatigue or brain fog
- Bloating or IBS-like issues
- Histamine or chemical sensitivity
- Mood shifts or low resilience
- Skin flares or autoimmunity

These symptoms can all be linked to how your immune system responds to bacteria, fungi, or their toxic byproducts.

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Inside This Guide

By ordering the **BiomeBurden™** test, your doctor is using advanced immune testing to explore contributing factors linked to more than 80 autoimmune conditions.

This test was developed by world-leading functional immunologists at Cyrex Labs, based on cutting-edge research into how the gut microbiome and immune system interact in chronic inflammation and autoimmunity.

Assessment Area Key

- Candida Species
- Food-Derived Yeasts
- Food-Derived Fungi & Molds
- Aerobic Enteropathogens
- Anaerobic Enteropathogens
- Neutrophil Activation Markers
- Cross-Reactive Human Tissue Antigens
- T-Cell Immune Profiling

What is Autoimmune Disease?

Autoimmune disease occurs when the immune system, which is meant to protect you, mistakenly attacks your own healthy tissues—like "friendly fire" in the body. This immune confusion, known as **immune dysregulation,** tends to arise in genetically susceptible individuals when triggered by environmental factors. As outlined in a 2014 special issue of Autoimmune Disease edited by **Aristo Vojdani, PhD, MSc, CLS** (the developer of **BiomeBurden™**), these triggers can include toxic chemicals, certain foods, and infections.

More recently, research has focused on the **gut microbiome and mycobiome**—the bacteria and fungi living in the digestive tract. When these organisms become imbalanced (a condition called **dysbiosis**), they may act as a bridge between environmental exposures and immune system breakdown, contributing to the onset of autoimmune conditions. (Figure 1).

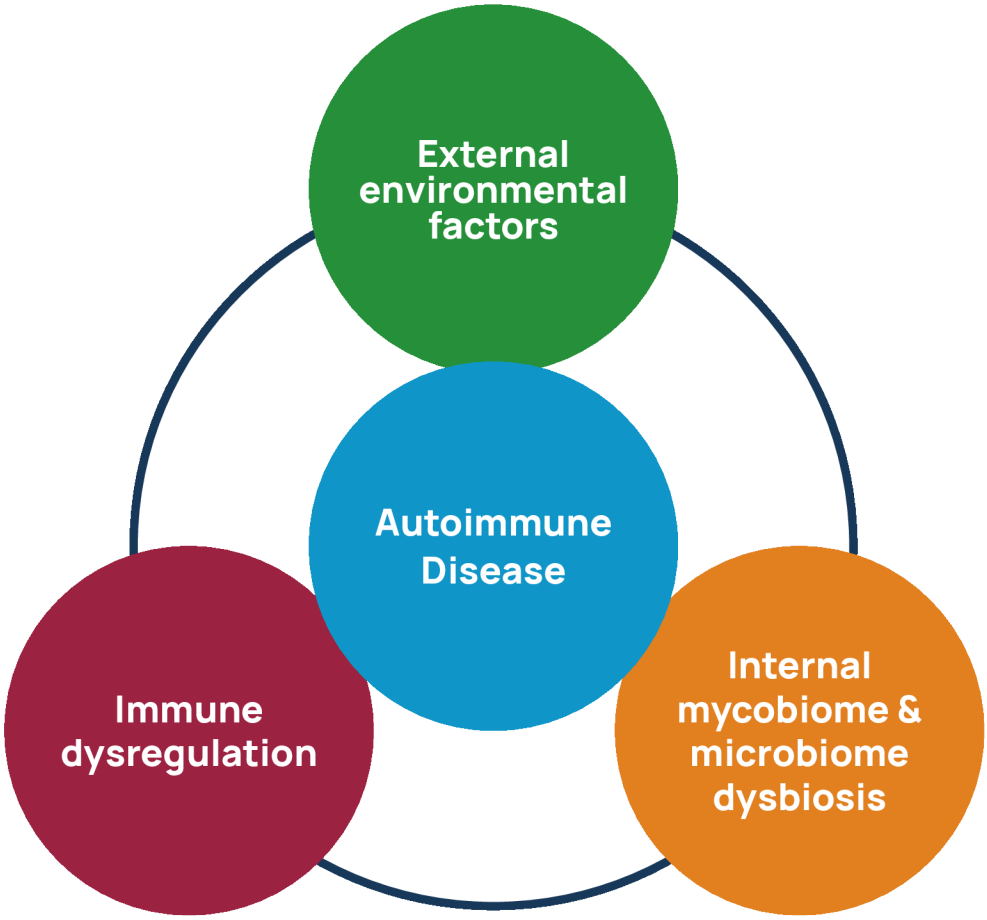


Figure 1. Dysbiosis of the gut mycobiome and microbiome is the bridge between environmental factors and immune dysregulation that leads to autoimmunity.

Normally, the immune system can tolerate external triggers like food, chemicals, pathogens and microbes. But when the gut microbiome or mycobiome becomes imbalanced (a condition called dysbiosis), this tolerance can break down. The immune system may then overreact, launching inflammation that can trigger or worsen autoimmune conditions.

This happens in part because antigens from gut bacteria and fungi influence immune cells like T-cells. At the same time, overactive plasma cells may begin producing antibodies not just against microbes—but also against your own tissues. Over time, this immune misdirection can contribute to autoimmunity.

This close link between gut microbes and immune health helps explain why adjusting the microbiome—based on personalized **BiomeBurden™** test results—may offer a powerful tool for preventing or managing autoimmune disease. This approach is known as the gut autoimmune solution or gut autoimmune resolution.

What Is Tested in the BiomeBurden™?

The **BiomeBurden™** testing series offers a progressive approach to evaluating microbial immune reactivity and immune regulation. The mycobiome and microbiome components of the series can also be ordered individually as single serum tests—allowing flexibility for targeted investigation or retesting when monitoring immune activity over time.

MycoBiomeBurden™ (Foundational)

Assesses immune reactivity (IgA and IgG) to multiple Candida species, including C. albicans, C. tropicalis, C. glabrata, C. parapsilosis, C. krusei, and C. auris, along with key virulence factors like candidalysin and germ tube protein.

Also includes alpha-enolase, a cross-reactive fungal enzyme linked to tissue mimicry and autoimmunity.

MicroBiomeBurden™ (Expanded)

Adds reactivity to food-derived yeasts (Saccharomyces cerevisiae and S. boulardii) and common food molds (Aspergillus, Penicillium, Cladosporium).

Also includes:

- Aerobic and anaerobic bacteria, associated with dysbiosis and inflammation
- Neutrophil activation factors, linked to tissue damage and chronic immune activation
- Actin peptide & Ubiquitin microbial proteins that may cross-react with human tissue

BiomeBurden™ Complete (Comprehensive)

Adds immune cell profiling, including total WBC, T-cell count, and subsets: Th1, Th2, Th17, Treg, and their ratios (Th1/Th2, Th17/Treg).

These markers offer insight into immune balance, helping identify early patterns of immune dysregulation or potential autoimmunity.

Candida Species

What is *Candida* infection (Candidiasis)?

Candida is a type of yeast (a fungus) that normally lives in small amounts in your digestive tract, vagina, and other moist areas like the mouth and rectum. In healthy conditions, it stays in balance and doesn't cause problems. But if your immune system is weakened or other microbes are disrupted, Candida can overgrow and lead to an infection.

One common trigger for this overgrowth is the overuse of antibiotics. Antibiotics can wipe out the good bacteria that normally keep Candida in check, giving it room to grow unchecked. This can cause not only surface-level yeast infections (like thrush or vaginal yeast infections) but also more serious infections—known as invasive candidiasis—if Candida enters deeper tissues or the bloodstream.

Hormonal changes like pregnancy, birth control use, or menopause can also make someone more prone to Candida overgrowth, especially vaginal infections.

Common symptoms of vaginal candidiasis include:

- Burning sensation during urination
- Itching and thick white discharge
- Redness or swelling of the vulva
- High blood sugar or other signs of diabetes

In men, Candida may cause redness, swelling, or irritation on the head or foreskin of the penis.

When Candida affects the mouth, it causes a condition called thrush—characterized by soreness, redness, and white patches on the tongue or inside the cheeks.

Your provider may use your symptoms, history, and lab tests to confirm a Candida infection. If overgrowth goes untreated, it can lead to stronger immune reactions. That's because Candida can look like parts of your own body—a phenomenon called molecular mimicry—and may trigger the immune system to mistakenly attack healthy tissues.

Candida also forms protective layers (called biofilms) and can shift into a more aggressive form that produces immune-activating proteins like candidalysin and alpha-enolase. Over time, this chronic immune response may contribute to autoimmune disease (see Figures 2 and 3).

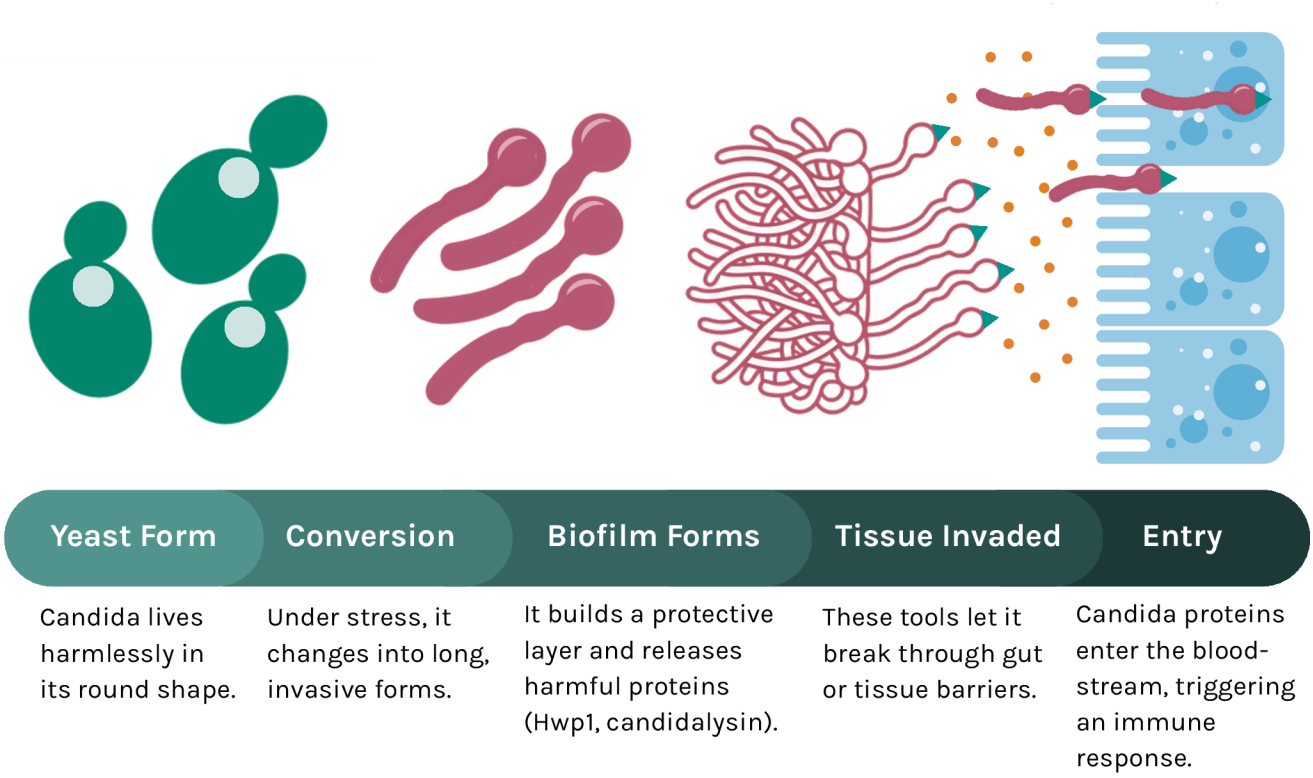


Figure 2. Transformation of *Candida* from yeast to germ tube and expression of *Candida* germ tube protein and candidalysin which promote invasive candidiasis by breakdown of epithelial cell structure both paracellularly and transcellularly. APECED – Entry of these virulent factors in the blood results in IgA and IgG production against *Candida* germ tube protein and candidalysin (*Candida* mycotoxin).

What autoimmune diseases are induced by *Candida*?

The following flower represents autoimmune diseases associated with different species of *Candida.*

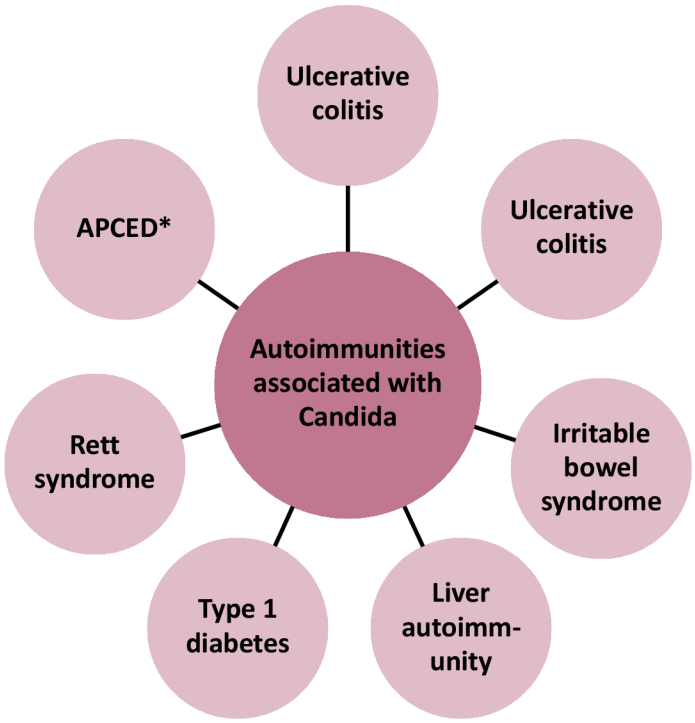


Figure 3. Autoimmune diseases associated with different species of *Candida.* *APECED – Autoimmune polyendocrinopathy candidiasis ectodermal dystrophy.

How is Candida infection diagnosed?

Your healthcare provider will ask about your symptoms and perform an exam. If your symptoms match a typical pattern, you may be diagnosed with a yeast infection (also called candidiasis).

To confirm the diagnosis, your provider may order a blood test to check for IgA and IgG antibodies against different Candida species, including:

- Candida albicans
- Candida tropicalis
- Candida glabrata
- Candida parapsilosis
- Candida krusei
- Candida auris

How is Candida infection treated?

Your treatment plan will depend on your test results and symptoms. If you have high levels of antibodies against Candida, your provider may recommend:

- A sugar-free, yeast-free, gluten-free, and low-carb diet
- Avoiding fermented foods and mushrooms

You may also be advised to take natural antifungal compounds, such as:

- Caprylic acid
- Oregano extract
- Tea tree oil
- Berberine
- Propolis extract
- Clove essential oil

These options are currently being studied and discussed in research.

For more severe infections, your provider may prescribe antifungal medications, available in different forms (tablets, creams, suppositories, or IV). Examples include:

- Nystatin
- Fluconazole
- Micronazole
- Itraconazole
- Voriconazole
- Anidulafungin
- Caspofungin
- Amphotericin

Food-Derived Yeasts

What are Food-Derived Yeasts?

Yeasts such as Saccharomyces cerevisiae have been used in food for thousands of years. In the food and beverage industries, S. cerevisiae is involved in producing fermented drinks (beer, wine, cider, whiskey, vodka, rum, sake) and in baking and cocoa fermentation.

Because of this widespread use, nearly everyone is exposed to S. cerevisiae antigens daily. Both brewer's and baker's yeasts can trigger immune-related side effects, such as:

- Headaches
- Bloating
- Stomach discomfort
- In some cases, links to Crohn's disease

S. cerevisiae contains mannan, a plant-derived sugar molecule. The immune system may recognize this as foreign and produce an antibody against it called:

Anti-Saccharomyces cerevisiae antibody (ASCA)

ASCA is often found in people with Crohn's and other autoimmune conditions. It's also present in some patients with Candida infections, because the same mannan is found on:

- Saccharomyces boulardii (a probiotic yeast)
- Some Candida species

This cross-reactivity can influence immune responses and contribute to autoimmunity.

S. boulardii is a tropical yeast first isolated in 1923 from mangosteen and lychee by French scientist Henri Boulard.

- Genetically, it's 99% identical to S. cerevisiae
- Often used in probiotics for gut health
- Sometimes labeled as S. cerevisiae var. boulardii

While it supports gastrointestinal health, in people with weakened immune systems, S. boulardii may cause systemic fungal infection.

What diseases are associated with Food-Derived Yeasts?

Although ASCA is more commonly detected in the blood of patients with Crohn's disease and candidiasis, this antibody is also found in several autoimmune diseases and colorectal cancer (Figure 4).

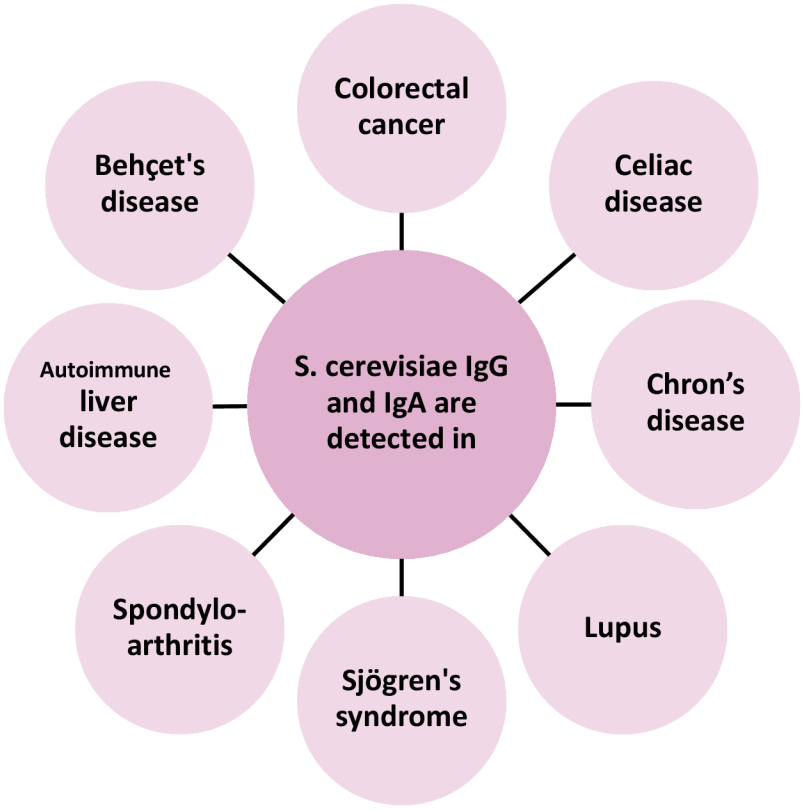


Figure 4. Detection of *Saccharomyces* IgG and IgA antibodies in different disorders

How is reaction to Food-Derived Yeasts detected?

Based on your symptomatology and medical history, your provider may order a blood test for measurements of the proper yeast antigens. High levels of antibodies against the yeast's antigen may indicate a significant immune reaction to these yeasts

How is reaction to Food-Derived Yeasts treated?

Your healthcare provider will first make sure that *Candida* infection is not responsible for this immune reaction against food-derived yeasts. Your provider may then inform you that yeast antibody-positive patients might benefit from nutritional interventions with selective eliminations of mold and yeast antigens, particularly those that are used in food fermentation and other food processing operations. This means eliminating foods using these mold and yeast antigens, such as beer, malt liquor, hard ciders, kombucha, miso, soy sauce, even grapes and berries, because a small amount of yeast grows on them in the wild, and switching to yeast-free bread and yeast-free cereals.

Food-Derived Fungi & Molds

What are Food-Derived Fungi and Molds?

Like food-derived yeasts, many molds are used in fermented foods like cheese and cured meats. Molds also naturally grow on fruits, nuts, grains, and vegetables—especially in warm, damp environments. Consuming mold-contaminated foods can lead to gastrointestinal issues or disrupt the immune system, especially due to mycotoxins—toxic compounds produced by molds. These mycotoxins:

- Can be found in grains, dried fruits, nuts, spices, and cereals
- Survive food storage, processing, and even cooking
- Commonly enter the body through contaminated foods (not just buildings)

Example: Aflatoxin, a harmful mycotoxin, is often found in contaminated peanut butter.

What Disorders Are Associated With Food-Derived Fungi & Molds?

Like mold exposure from water-damaged buildings, food-derived molds and their toxins can disrupt immune function—leading to:

- Chronic inflammation
- Autoimmunity
- Neurodegenerative effects (brain fog, cognitive decline)

How Is Reaction to Food-Derived Fungi & Molds Detected?

Immune reactivity is assessed by measuring IgA and IgG antibodies in your blood to molds isolated from common food sources.

How Is Reaction to Food-Derived Fungi & Molds Treated?

Your provider may recommend:

- A diet low in yeasts and fermented foods
- Washing produce with a 5% vinegar solution before eating
- Detoxification support, including:
  - Activated charcoal
  - Glutathione
  - Infrared sauna
- Antifungal medications, such as:
  - Nystatin
  - Itraconazole
  - Treatments also used for Candida infections

Aerobic Enteropathogens

What are Aerobic Enteropathogens?

Aerobic enteropathogens are oxygen-loving bacteria that can cause illness when they overgrow due to gut microbiome imbalance (dysbiosis). Common examples include E. coli, Salmonella, and Shigella, which are often linked to food poisoning. When present in excess, these bacteria release toxins that can damage the gut lining, trigger inflammation, and contribute to autoimmune disease.

How are alterations to Aerobic Enteropathogens detected?

Increases in the levels of IgA and IgG antibodies against aerobic enteropathogen toxins indicate gut dysbiosis with possible chronic gastroenteritis.

How are alterations to Aerobic Enteropathogens treated?

Treatment typically focuses on balancing the gut microbiome, repairing the gut lining, and preventing long-term inflammation or autoimmunity. Your provider may recommend prebiotics, probiotics, and other gut-healing protocols to support this process.

Treatment typically focuses on:

- Balancing the gut microbiome
- Repairing gut lining and barriers
- Preventing long-term inflammation or autoimmunity

Your provider may recommend:

- Prebiotics and probiotics
- Gut-healing protocols
- Targeted antibiotics, such as:
    - Metronidazole
    - Clindamycin
    - Vancomycin
    - Cephalosporins
    - Carbapenems
    - Quinolones
    - Beta-lactams

What diseases are associated with overgrowth of Aerobic Enteropathogens in the gut?

The production of many toxins by these bacteria has the capacity to damage the structure of the gut barrier and to open the gate for inflammation, autoimmunity, and even neurodegenerative disorders such as Alzheimer's disease. Major abnormalities associated with aerobic enteropathogens are shown in Figure 5.

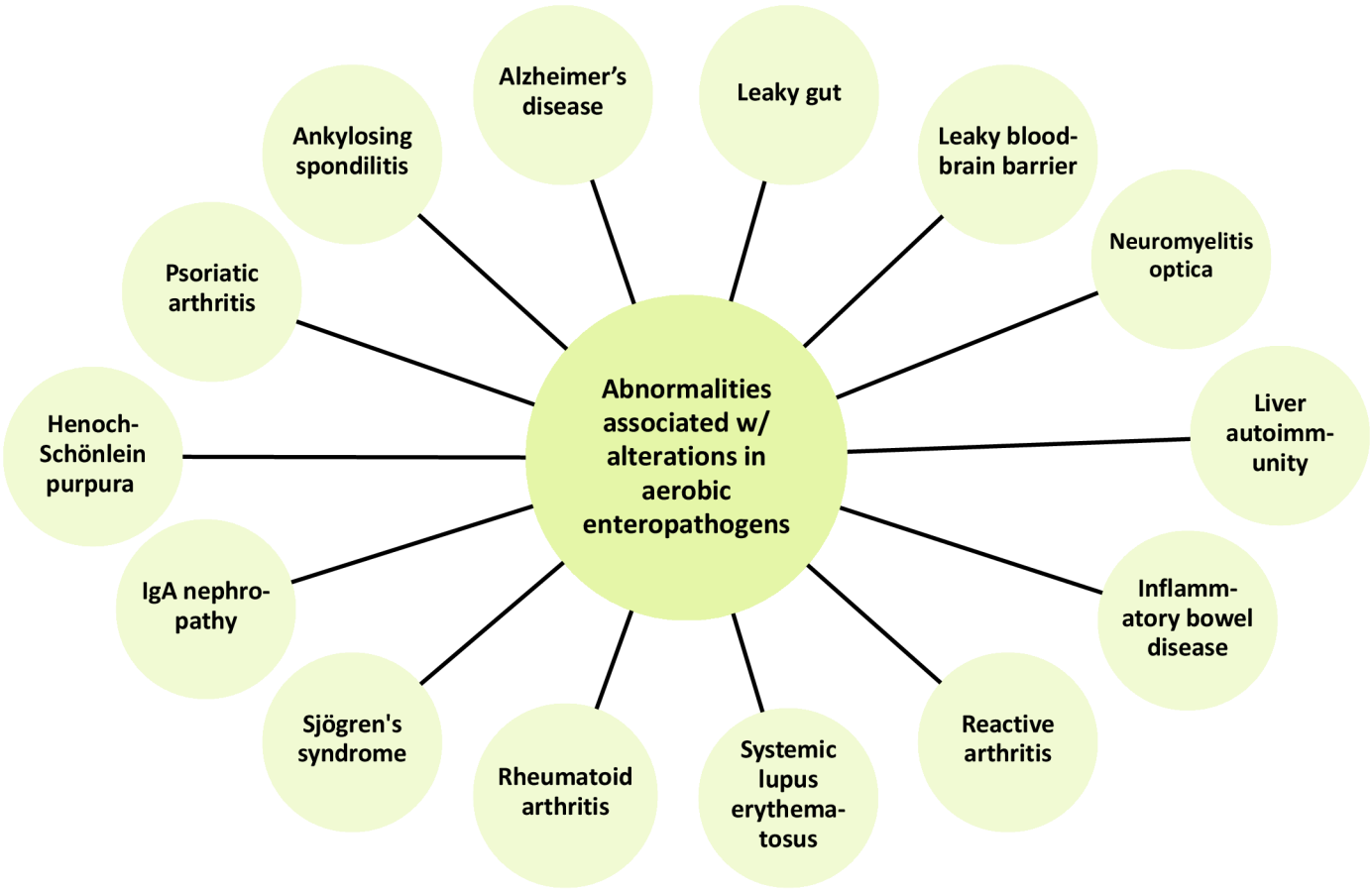


Figure 5. Abnormalities associated with aerobic enteropathogens

Anaerobic Enteropathogens

What are Anaerobic Enteropathogens?

Anaerobic enteropathogens are bacteria that thrive in low-oxygen environments, particularly within the gut lining. Common examples include:

- Clostridium
- Bacteroides
- Yersinia

These bacteria can produce highly toxic substances—like LPS, phospholipids, proteases, and collagenase—that mimic human tissue structures. This mimicry can confuse the immune system, contributing to inflammation and autoimmune diseases.

How are alterations to Anaerobic Enteropathogens detected?

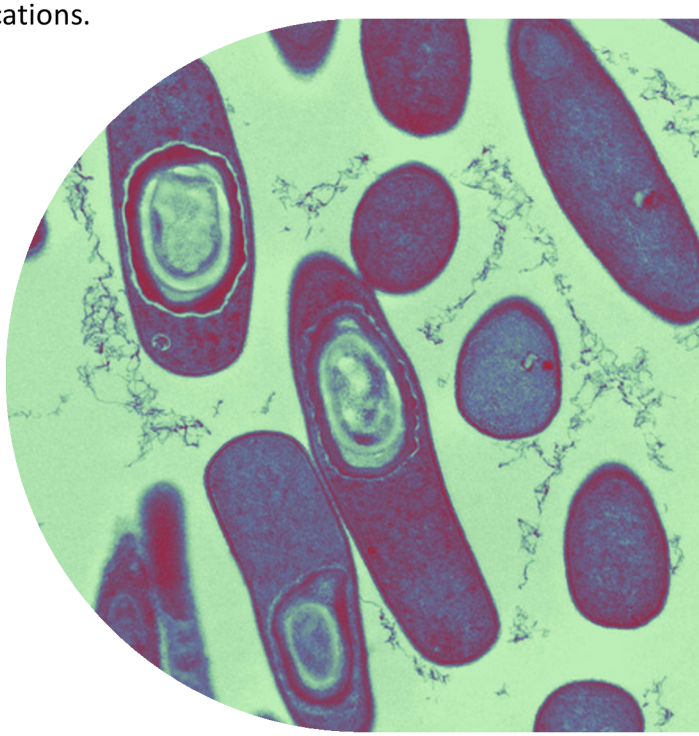
We measure IgA and IgG antibodies against different toxins from these bacteria. High levels may indicate gut dysbiosis and gut inflammation.

How are alterations to Anaerobic Enteropathogens treated?

The goal is to prevent inflammation and autoimmune complications.

Treatment may include:

- Prebiotics and probiotics to support healthy gut flora
- Targeted antibiotics such as:
  - Metronidazole
  - Clindamycin
  - Vancomycin
  - Cephalosporins
  - Carbapenems
  - Quinolones
  - Beta-lactams



What diseases are associated with too many Anaerobic Enteropathogens in the gut?

Inflammation and autoimmunity are two major abnormalities induced by anaerobic enteropathogens. They can do it by molecular mimicry or by virulence factors' induction of tissue damage, the subsequent release of tissue antigens, and their presentation to the immune system, resulting in the production of antibodies against human tissue components, which can lead to a variety of disorders (Figure 6).

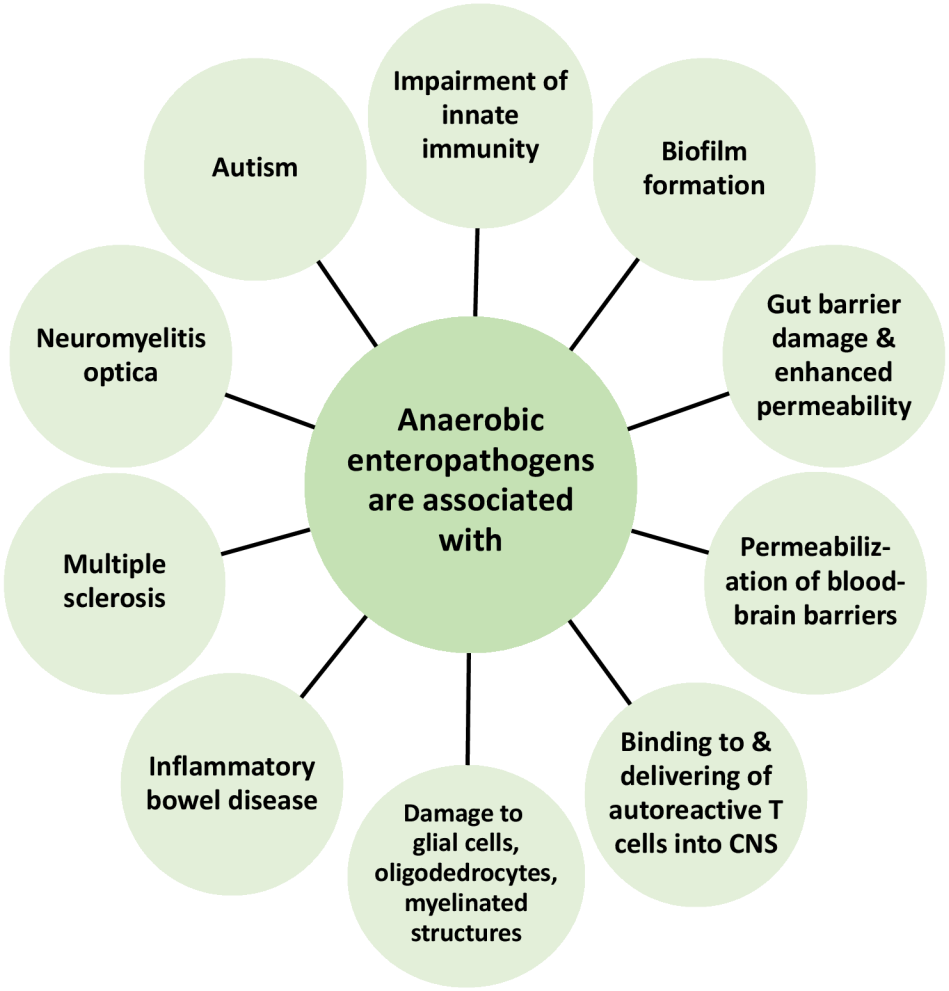


Figure 6. Association between anaerobic enteropathogens and a spectrum of disorders, from immune, intestinal, BBB-related, to neuroautoimmune.

Neutrophil Activation Factors

What are Neutrophil Activation Factors?

Neutrophils are the most common type of white blood cell and play a key role in your immune system. They're called into action when your body detects an infection—especially from organisms like Candida albicans—and rapidly move from your bone marrow to the site of infection.

Once activated, neutrophils travel through blood vessels and target microbes that have been flagged by antibodies. They attack using powerful immune chemicals called neutrophil activation factors. When infections persist, neutrophils may stay overactive—releasing these factors uncontrollably. This can damage nearby tissue and contribute to autoimmune disease.

What Conditions Are Linked to Neutrophil Activation?

Immune responses to neutrophil activation factors have been observed in various autoimmune and inflammatory conditions, including:

- Ulcerative colitis
- Small vessel vasculitis
- Eosinophilic granulomatosis
- Microscopic polyangiitis
- Chronic yeast and bacterial infections

How Is Neutrophil Activation Detected?

Your provider can measure IgA and IgG antibodies in your blood that target neutrophil activation factors. High levels suggest abnormal immune activation and potential autoimmunity.

How Is Excessive Neutrophil Activation Treated?

Treatment focuses on identifying and reducing the environmental triggers that cause neutrophils to become overactivated.

These triggers may include:

- Silica or asbestos exposure
- Dust and air pollution
- Cigarette smoke
- Certain medications
- Microbial, fungal, and viral infections
- Gut dysbiosis
- Toxins or allergens from pets or farm environments

Your provider will work to identify these triggers and help you reduce or eliminate them. This is a critical step for patients with autoimmune/chronic infections where neutrophils are in a prolonged "attack mode."

Alpha-Enolase

Cross-Reactive Human Tissue Antigens

What Is Alpha-Enolase?

Alpha-enolase is an enzyme found in many microorganisms, including yeasts and bacteria, as well as in various human cells—especially those in the skin (epithelial), blood vessels (endothelial), and immune system.

Its structure is highly conserved, meaning it looks almost identical across different organisms. As a result, alpha-enolase from Candida, Saccharomyces, and even human tissue is very similar. This structural overlap can confuse the immune system.

When pathogens use alpha-enolase to break down human tissue and invade cells, the immune system responds by producing IgA and IgG antibodies—not only against the pathogen's alpha-enolase, but also against human tissue components released during this damage.

If these infections aren't addressed, this response can trigger the immune system to attack healthy tissue, potentially leading to autoimmune disease.

How Is Alpha-Enolase Antibody Detected?

Your provider will arrange a blood draw that is sent to a specialized lab. There, levels of IgA and IgG antibodies against alpha-enolase are measured to assess your immune system's reactivity.

How Is Elevation in Alpha-Enolase Antibodies Treated?

Because alpha-enolase exists in many infectious agents and even in common dietary yeasts, your provider must first determine the source of the immune response.

Elevations may be due to:

- Oral pathogens
- Yeast overgrowth or infection
- Dietary exposure to brewer's or baker's yeast

Each cause requires a different treatment approach. Identifying and addressing the source is essential to reduce antibody production and calm the immune response.

What diseases are associated with bacterial, fungal and human α-Enolase?

Because the alpha-enolase enzymes from pathogens share up to 84% similarity with human alpha-enolase, antibody against alpha-enolase is detected in more than 20 different inflammatory and autoimmune disorders (Figure 7).

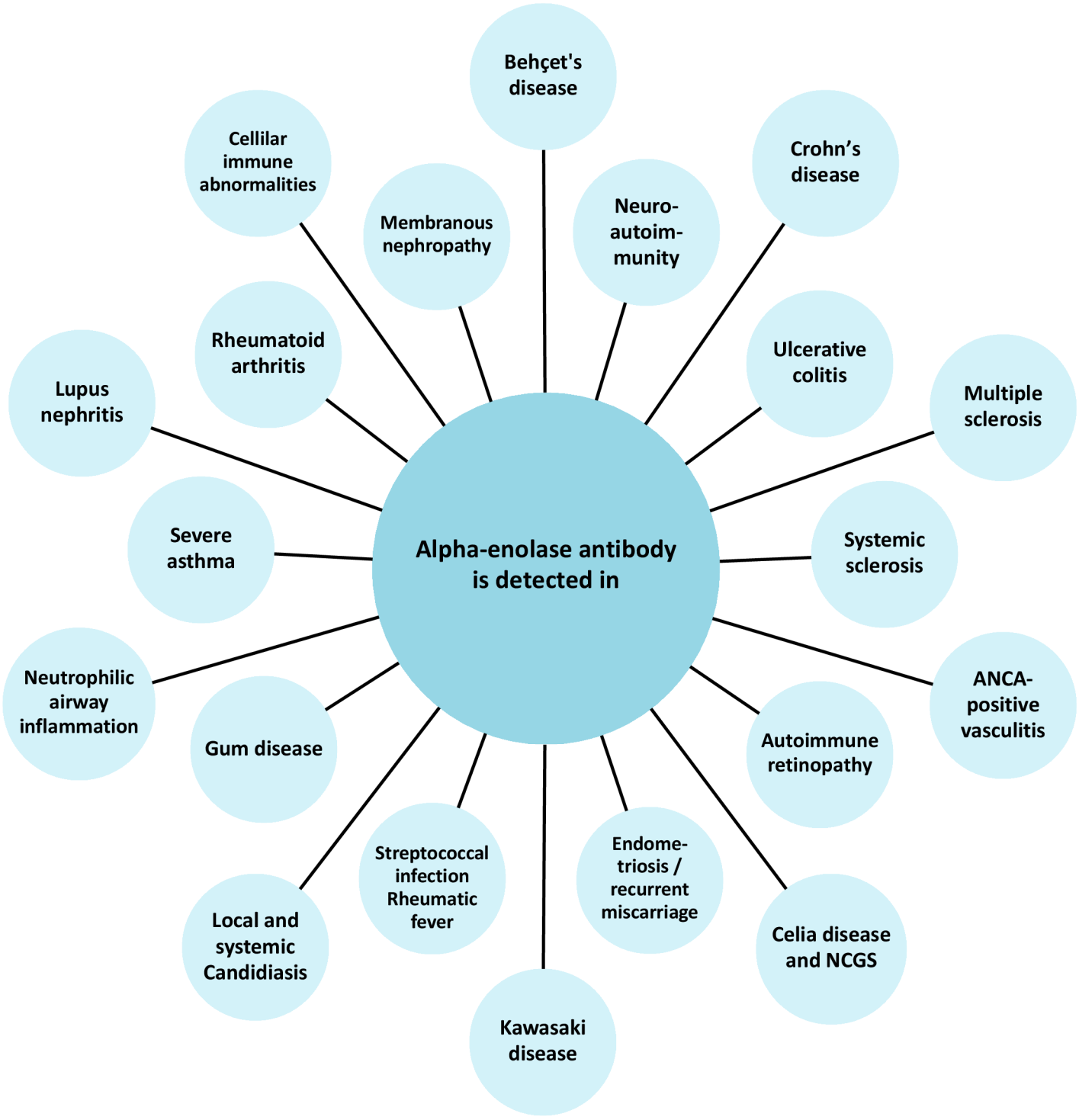


Figure 7. Association of alpha-enolase with inflammatory and autoimmune disorders.

Actin

Cross-Reactive Human Tissue Antigens

What Is Actin?

Actin is a protein found in many organisms—including Candida albicans, Saccharomyces cerevisiae (a food-derived yeast), and human skeletal, cardiac, and smooth muscle. Actin helps cells maintain their shape and allows them to move, divide, and respond to their environment.

In autoimmune conditions, the body may mistakenly produce anti-actin antibodies—also known as smooth muscle antibodies—that target actin in your own tissues. These antibodies can cause immune damage to various organs, particularly when infections or food exposures mimic human actin proteins.

How Is Elevated Actin Peptide Treated?

Treatment decisions are based on your full immune profile. If elevated actin peptide antibodies are detected alongside:

- Candida antibodies → Your provider may treat for candidiasis.
- Food-derived yeast antibodies → A yeast-free or fermented food-free diet may be recommended.
- Celiac-related markers → A gluten-free diet may be advised, since actin antibodies appear in about 70% of celiac patients.

Because actin elevation often overlaps with other immune reactivities, your provider will look at the full picture before deciding on a care plan.

How Is Actin Peptide Antibody Detected?

Your healthcare provider will arrange for the drawing of a blood sample from you to be sent to a special lab for the testing of IgA and IgG antibodies against actin peptide.

What diseases are associated with Actin peptide antibodies?

Patients with celiac disease, autoimmune hepatitis (AIH), primary biliary cholangitis (PBC), primary sclerosing cholangitis (PSC), Crohn's disease, ulcerative colitis, rheumatoid arthritis, thyroid autoimmunity, gut mycobiome disturbance, immune dysfunction, and patients with immune reaction to some foods may exhibit high levels of antibodies against actin (Figure 8).

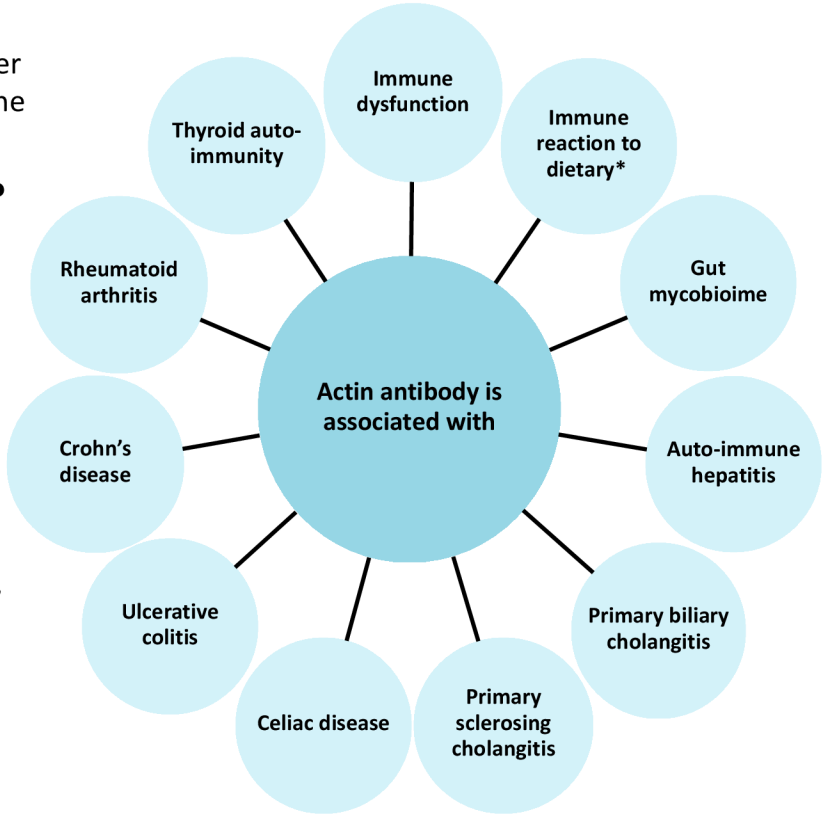


Figure 8. Association between actin antibodies and various autoimmune disorders.

Ubiquitin

Cross-Reactive Human Tissue Antigens

What Is Ubiquitin?

Ubiquitin is a key protein found in all human cells. Its main job is to help your body tag and break down damaged or unneeded proteins—an important process for preventing disease and maintaining immune balance.

However, bacteria, yeasts, and even human cells all express ubiquitin or similar molecules. When the immune system reacts to microbial forms of ubiquitin, it may mistakenly attack human ubiquitin as well, due to structural similarities.

This type of immune "cross-reaction" can interfere with protein recycling and contribute to:

- Autoimmune conditions
- Neurodegenerative disorders
- Immune deficiency
- Possibly even cancer

How Is Elevated Ubiquitin Antibody Treated?

Your provider will investigate the source of the immune reaction. In many cases, the antibodies are triggered by the anaerobic bacterium Bacteroides fragilis, which closely resembles human ubiquitin and lives in the gut.

If this is the case, treatment may include:

- Prebiotics and probiotics to support gut balance
- Targeted antibiotics effective against B. fragilis:
  - Metronidazole
  - Clindamycin
  - Cephalosporins
  - Carbapenems
  - Quinolones
  - Beta-lactams
  - Vancomycin

Your provider may also explore whether these antibodies are contributing to immune dysfunction or other chronic symptoms before initiating treatment.

What disorders are associated with Actin peptide antibodies?

Bacteroides fragilis, Salmonella, Shigella, E. coli, Yersinia, Chlamydia, Rickettsia, and Xanthomonas are some examples of human pathogens that produce ubiquitin-like molecules as a protective mechanism. Because of this, antibodies against yeasts, bacterial and human ubiquitin are detected in patients with different immune disorders (Figure 9).

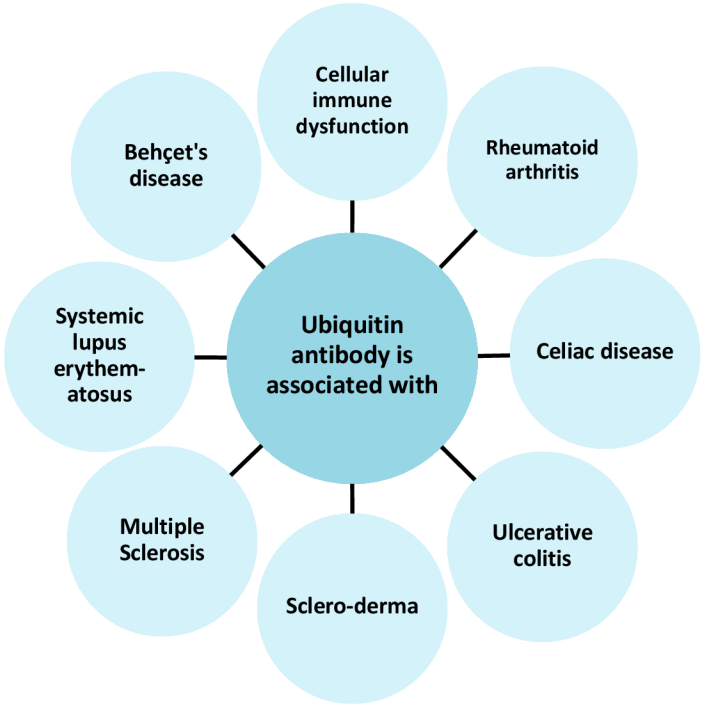
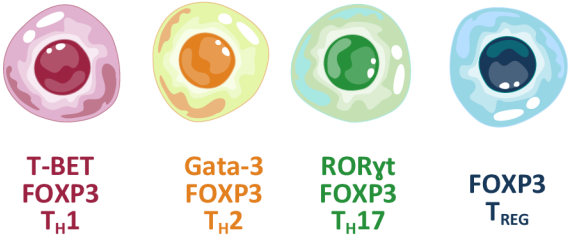


Figure 9. High titers of ubiquitin antibody were detected in immune dysfunction, autoimmune disorders and bladder abnormalities.

T-Cell Immune Profiling



What Are T-helper-1, T-helper-2, T-helper-17, and Regulatory T Cells?

CD4+ T cells, also known as T-helper cells, are white blood cells that help coordinate your immune response. Rather than attacking pathogens directly, they activate other immune cells—like macrophages, natural killer (NK) cells, cytotoxic T cells, and B cells—to eliminate infection. There are several T-helper subtypes—Th1, Th2, Th17, and Treg—each with a unique role:

- Th1 and Th17 help fight infections through inflammation
- Th2 supports antibody production and allergic responses
- Treg calms the immune system and maintains balance

Together, they regulate both cell-mediated and antibody-mediated immunity. Maintaining the right levels of each type is key for protection against infections, autoimmunity, and even cancer.

What Diseases Are Associated with Abnormal Numbers of Th1, Th2, Th17, and Tregs?

- **Abnormal Th1 cells** are linked to a wide range of inflammatory and autoimmune conditions, often triggered by bacteria or viral infections.
- **Abnormal Th2 cells** are associated with chronic inflammation and classical allergies. Elevated Th2 alongside low Th1 is often found in people exposed to toxic chemicals like mycotoxins.
- **Abnormal Th17 cells** are linked to autoimmune and inflammatory conditions caused by yeasts, fungi, molds, and mycotoxins, as well as neurological disorders and liver disease.
- **Abnormal Treg cells** reflect a loss of immune balance and are seen in disorders driven by environmental triggers, where immune tolerance breaks down.

How are abnormal numbers of Th1, Th2, Th17 and Tregs detected?

Your healthcare provider will arrange for the drawing of a blood sample from you to be sent to a special lab which will test for absolute numbers and ratios of these important T-helper cells as well as other valuable biomarkers of lymphocyte numbers for your immune health.

How Are Elevated or Imbalanced T-helper Cells Treated?

Your provider will review your **BiomeBurden™** test results and determine the best course of action based on your overall immune profile. If imbalances in T-helper cells are detected alongside other immune markers, they may explore the use of Immune response modifiers (IRMs)—which can help normalize T-helper cell production. Because different T-helper cells can be increased or suppressed by different environmental or internal triggers, treatment may include lifestyle changes, dietary adjustments, supplements, or targeted therapies. Your provider will decide whether IRMs or other balancing strategies are right for you.

Conclusion

BiomeBurden™ testing requires just two tubes—one whole blood and one serum—to yield clinically meaningful insights.

This minimal draw enables a comprehensive view of the patient's immune reactivity across microbial, fungal, and human tissue antigens.

Elevated antibodies to components of the microbiome, mycobiome, neutrophil activation markers, or self-antigens may reflect early immune dysregulation—often years before clinical symptoms emerge. These immune markers can provide critical clues in cases of unresolved inflammation, persistent GI symptoms, or suspected autoimmunity.

By identifying immune reactivity patterns early, providers can take a proactive approach—modulating immune balance, targeting microbial or environmental triggers, and supporting long-term resilience before overt disease manifests.

Specimen Requirement for Serum Sample

Collect: 5 mL red top or tiger top

Transport: 2 mL serum

Multiple add-ons to existing orders will be accepted within 14 days of specimen receipt; after that time, specimens will be frozen and only one add-on request, which can consist of several arrays, can be processed between days 15-83. Specimens are stored for 90 days.

Specimen Requirement for Whole Blood Sample

Collect and transport filled K2 EDTA tube with whole blood.

Collect samples **Monday through Thursday – must ship same day for Next Day Early Delivery.**

NEVER REFRIGERATE OR FREEZE SPECIMEN