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SPECIAL ISSUE

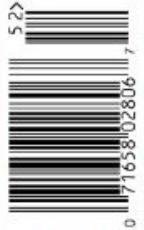
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# Straight from the Gut

## The microbiome and autoimmunity

In practicing medicine from a holistic and functional perspective, my goal is always to assess the entire body. Every system must be explored and evaluated fully to understand why problems exist. This is especially true when it comes to autoimmune conditions.

BY RAPHAEL KELLMAN, MD

**C**urrently, there are more than 80 categorized autoimmune diseases, however, from the perspective of the body,

these are not unrelated conditions. Like branches of a tree, they all share common roots. One may be called lupus and another MS, but each is actually a manifestation of the same process happening throughout the body. If that process is not switched off, it is quite common to develop antibodies to other areas as well.

Several factors contribute to the creation of an autoimmune state. Genetics can make a person susceptible, but that alone will not cause autoimmunity. The combination of environmental triggers with

intestinal permeability and dysfunction work together to set off the process that underlies autoimmune disease. The gut microbiome is one of the key players involved at the deepest level of this pathology.

### THE IMPACT OF MICROBES ON THE IMMUNE SYSTEM

The intestine is home to a vast, diverse array of bacterial species that co-evolved with us and are intimately involved in human health. They are directly responsible for key processes such as strengthening and maintaining intestinal health, promoting healthy digestion and metabolism, detoxification, synthesizing critical nutrients including certain vitamins and natural antibiotics, as well as modulating inflammation, gene expression, and mood. In addition,

these health-promoting gut bacteria educate and regulate the human immune system.

Immune function is especially important and complex by nature. A balanced system closely defends against pathogens and foreign matter while learning to tolerate self and friendly bacteria. A loss of self-tolerance is the very definition of autoimmunity as the immune system turns and begins to attack its own healthy tissue.

To safeguard against this, the microbiome is deeply involved in the regulation of the innate (the redness and swelling observed around a cut) and adaptive (the response that helps you fight off a cold) immune responses while influencing both local intestinal and body-wide immune activity. Commensal gut bacteria have the ability to teach the immune



system by triggering the maturation of regulatory T cells (Tregs). Tregs work to suppress the immune response of other cells, preventing excessive reactions, maintaining self-tolerance, and preserving healthy tissue. Further, the gut microbiota regulate the development of the antigen-presenting cells (APC) that help the immune system identify pathogens. By grabbing a piece of a pathogen's cell wall and presenting it to a white blood cell, APCs are key players that can ultimately set off an immune response. Additionally, the majority of the immune system is located in the intestine. Without our bacterial guardians to keep the gut healthy and working optimally, the immune system would be compromised.

Inflammation is another huge component of autoimmunity that is

greatly influenced by the gut microbiome. Friendly resident bacteria have the power to decrease levels of several inflammatory cytokines. These are special substances that act on other cells to produce inflammation. IL-10, an anti-inflammatory cytokine, is increased by the same helpful bacterium.

While a balanced microbiome can be our best ally, imbalances, or dysbiosis, can lead to a whole host of chronic conditions including autoimmune disease. Negative shifts in bacterial composition are directly involved with creating inflammatory states and systemic dysfunction present in the conditions that lead to a loss of self-tolerance and autoimmunity. Once pathogenic bacteria and organisms overtake the ecology, the benefits of the microbiome are lost and health begins to slip away.

#### **AUTOIMMUNE TRIGGERS AROUND**

Earlier, I mentioned triggers that are involved with initiating on the autoimmune process. Understanding what they are can be a very empowering tool to calm the immune system. Two of the most common culprits are stress and diet, which have a huge impact on health in general. Specifically, they can affect the well-being and function of the microbiome. What we eat has a direct impact on the type of bacteria that dominate our gut flora. A poor diet of sugary, high-fat foods devoid of plant content will decimate the health of intestinal bacteria, while stress can suppress healthful bacteria colonies. Taking steps to improve these two areas can greatly alter the course of any autoimmune condition.

Toxins, mold, and allergens can also drastically alter microbial balances,



allowing opportunistic and pathogenic strains to flourish, thereby setting the stage for autoimmunity. Additionally, chemicals and toxins often bind to body cells. The adaptive immune system will create antibodies to attack the toxin—but also destroy the healthy cell to which it is attached. At other times, chemicals may act as endocrine disruptors, interrupting vital hormone signaling systems and changing the way inflammation and the immune system work.

Leaky-gut syndrome is another common trigger. It often occurs when the microbiome is no longer healthy and able to support and fortify the intestinal wall. Large particles of food, pathogens, and foreign matter pass directly into the body, setting off a full-scale immune attack that often winds up damaging healthy tissue in the process. Autoimmune conditions are very dependent on the health of both the intestine and the gut microbiome. Gluten, parasites, *Candida*, bacterial

overgrowth, infections, toxins, stress, and even a lack of vitamin D can all contribute to intestinal permeability.

Adding to the complex systemic dysfunction, gluten has been shown to spark inflammation and create immunity problems through molecular mimicry. Gluten closely resembles human cells, so it can be easy for the immune system to damage healthy tissue in the process of attacking gluten. If you have any autoimmune condition such as lupus, rheumatoid arthritis, Hashimoto's, or multiple sclerosis, continuing to eat gluten is akin to pouring gasoline on a raging fire. All too often, patients believe they should only avoid gluten if they have celiac disease, but that is not the case.

Autoimmunity can also be switched on after infection by certain bacteria and viruses that look similar to cells of the body. PANDAS is a pediatric condition occurring after a strep infection triggers the immune system to attack brain cells. The bacteria

*Yersinia enterocolitica* has surface peptides (protein chains) that look like receptors on the thyroid. When the immune system goes after *Yersinia*, it attacks thyroid tissue as well. Currently, there are many pathogens being linked to the onset of autoimmune conditions.

Many patients suffering from autoimmunity also have a low thyroid, driving much of the dysfunction. When the thyroid is low, all systems will work at a reduced capacity, including the intestine. Intestinal dysbiosis, bacterial overgrowth, and pathogenic infection are quite common in those with hypothyroidism, all of which is linked to autoimmunity.

#### UNDERSTAND UNDERLYING CAUSES

There are many pathways leading to autoimmune conditions. Fully exploring and correcting all of the underlying issues is imperative to stop the assault of inappropriate immune response. Deep testing is required to gain a true understanding of an individual's autoimmune process and the ways to quiet it.

As mentioned, the health of the microbiome is a critical piece in both the development of autoimmune conditions or protecting against them. Restoring the highest function of the intestine and its bacteria should be the priority for any practitioner working with autoimmune patients. A hydrogen/methane breath test can detect the presence of bacterial overgrowth in the small intestine—often referred to as SIBO. The large intestine bacterial composition can be diagnosed using a microbiome panel, which detects pathogens through metabolites found in urine. Stool testing can give further analysis of bacterial composition, pathogens, and the state of the intestinal immune system by measuring levels of secretory IgA (SigA).

A full autoimmune panel can determine the scope of the autoimmune process. A Hashimoto's disease patient, for example, may also have high levels of rheumatoid factor, while a lupus patient may test positive

A woman with dark hair in a bun, wearing a white tank top, is shown in profile. She is holding her right elbow with her left hand. A bright red glow is visible on her elbow, indicating pain or inflammation. The background is a solid light blue color.

**IF YOU HAVE ANY  
AUTOIMMUNE  
CONDITION** SUCH AS  
LUPUS, RHEUMATOID  
ARTHRITIS, HASHIMOTO'S,  
OR MULTIPLE SCLEROSIS,  
CONTINUING TO EAT  
GLUTEN IS AKIN TO  
POURING GASOLINE  
ON A RAGING FIRE



for an autoimmune marker called ANA. Running a wide range of autoimmune markers can be very helpful to understand the level of the autoimmune process that is taking place in the body.

It is crucial to measure a full range of inflammatory markers (such as IL-1, IL-6, TNF-alpha, CRP, and ESR) as well as search for the presence of allergens, toxins, mold, and heavy metals. Patients should also be assessed for a full range of pathogens, parasites, viruses, fungi, and *Candida*.

Comprehensive testing of the thyroid will ensure a major underlying problem is properly diagnosed and corrected. At a minimum, lab values of the hormones T3 and T4 (free and total), reverse T3, and TSH. Antibodies to thyroid tissues should be evaluated, as well. Additionally, I always use the TRH test, which is the deepest way to assess thyroid function to date. Resolving thyroid imbalances is critical for all health conditions, especially autoimmune processes. By restoring function to the thyroid, the entire body can begin to work at a higher level and

## RESOLVING THYROID IMBALANCES IS CRITICAL FOR ALL HEALTH CONDITIONS, ESPECIALLY AUTOIMMUNE PROCESSES.

regain wholeness.

Lastly, I normally run tests to check adrenal function, genetic predisposition to health conditions, glucose and insulin levels, and general body function. All systems work together to create the whole, so all are worth evaluating.

In my practice, I stress the importance of eating a diet that will nourish and sustain a positive bacterial balance where “friendly” bacteria are dominant. A microbiome diet rich with prebiotic plant foods such as onion, garlic, leek, jicama, sunchokes, and asparagus can help ensure there is a health-promoting

bacterial balance. Some patients may require a specialized protocol and diet for SIBO to eliminate any overgrowth issues in the small intestine. The 4R method (remove, replace, repopulate, and repair) is a well-rounded treatment tool to correct microbial imbalance and reset the system by removing all substances underscoring problems while adding supports for healing. Additionally, the use of targeted probiotics will rebuild intestinal colonies while *Saccharomyces boulardii* can attenuate an overactive immune response.

For many patients, the addition of more novel therapies can be a very powerful way to reset the immune system. I frequently prescribe treatment techniques like ultraviolet blood irradiation, IV nutrients, ozone therapy, homeopathic immunomodulators, and anti-inflammatory compounds.

To complete the approach, all conditions diagnosed upon testing must also be addressed including the correction of thyroid imbalances, chelation for heavy metals, stress reduction, restoration of metabolic dysfunction, and rebalancing of hormones and sugar regulatory pathways. In this way, every system can be elevated and baseline function improved enough to allow the body to return to its natural state and regain its ability to heal.

This is personalized medicine that addresses the specific make-up of each individual’s constellation of systems. I have seen again and again the opportunity to not only halt but also reverse autoimmune conditions once all of the contributing processes have been accurately explored, identified, and corrected. ■

*RAPHAEL KELLMAN, MD, is a respected author and board-certified physician. During the past two decades, Dr. Kellman has treated more than 40,000 patients, developing a global reputation for investigating the root causes of disease and pioneering the use of functional and microbiome medicine. // [kellmancenter.com](http://kellmancenter.com)*