



## Clinical Immunology and Autoimmunity

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### EDITORIAL NOTE

Clinical Immunology and Autoimmunity is a stimulating field because it connects multiple scientific disciplines and encourages scientists to collaborate in the research and development of new drugs. This is in contrast to other branches of medicine, which focus mainly on medical theory and foundations. Health practitioners assess patients in clinical medicine in order to diagnose, treat, and prevent disease. TDM assists the doctor in determining whether you are receiving the correct dosage of your medication.

Clinical immunology is the study of diseases that are caused by immune system malfunctions (failure, aberrant action, and malignant growth of the cellular elements of the system). Immune responses play a role in the pathology and clinical features in diseases of other systems as well.

The immune response in autoimmune disease is similar to that seen in infections, with the exception that self-antigens are (or become) the adaptive immune system's target. These self-antigens could trigger a process within a single organ, such as the thyroid gland (Grave's disease, Hashimoto's thyroiditis) or the brain (multiple sclerosis). Alternatively, reactions to them can result in a more widespread inflammatory condition (e.g. systemic lupus erythematosus [SLE]).

When our immune system attacks our own tissues, autoimmune disease develops. T-cell receptors and B-cell receptors, as in all adaptive immune responses, are based on particular antigens. Unlike infection, the antigens recognized by these cells are processed from proteins inside the target organ, resulting in a persistent inflammatory response that disrupts the tissue's normal function.

Over the last two decades, clinical immunology has advanced substantially as a specialty, as has our knowledge of the immunological basis of many diseases and the advancement of immunological therapies. It's difficult to imagine a field that hasn't grown an "immunological dimension" in recent years.

Antibodies against these antigens are generated by the immune system, allowing it to kill these harmful substances. Your immune system cannot differentiate between healthy tissue and potentially harmful antigens when you have an autoimmune disorder. As a consequence, the body triggers a chain reaction that causes normal tissues to be destroyed.

The immune system may produce antibodies that, instead of fighting infections, attack the body's own tissues in response to an unknown cause. The aim of autoimmune disease treatment is to reduce immune system function. Rheumatoid arthritis is an example of an autoimmune disease. Asthma, hereditary Mediterranean fever, and Crohn's disease (inflammatory bowel disease) are all caused by an immune system overreaction, while autoimmune polyglandular syndrome and certain forms of diabetes are caused by the immune system targeting "self" cells and molecules. Infections such as the flu virus, mono (mononucleosis), and measles can also temporarily weaken the immune system. Smoking, alcohol, and poor nutrition can all weaken your immune system.

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