

IMMUNOLOGY AND INFECTIOUS DISEASE, B.S.

Seven Penn State campuses are scheduled for closure after Spring 2027: DuBois, Fayette, New Kensington, Mont Alto, Shenango, Wilkes-Barre, and York. New students are not being admitted at these campuses.

Begin Campus: Any Penn State Campus

End Campus: University Park

Program Description

Immunology is the study of how animals and humans protect themselves from pathogens. Understanding basic mechanisms of immunity provides insights into how blood cells develop and how pathogens are recognized and attacked. Furthermore, understanding the concepts behind immunology is necessary for drug and vaccine design. Dysregulation of the processes that regulate immunity can contribute to uncontrolled inflammation, tissue destruction, autoimmunity, immunodeficiencies, leukemia and related cancers. Immunology includes a broad range of disciplines including but not limited to microbiology, virology, animal health, genetics, biochemistry, molecular and cell biology. Students enrolled in the Immunology and Infectious Disease Major will develop and understanding of normal immune responses to bacterial, fungal, and viral agents and appreciate the potential pathological outcomes of these responses. Students will learn about events that shape the immune response; the general biology of pathogens and the mechanisms by which they cause disease. In addition, basic skills in microbiology, molecular biology and biochemistry will be acquired. Students completing a B.S. degree in Immunology and Infectious Disease will be well prepared for veterinary, medical or other professional schools, Ph.D. graduate training in a wide variety of areas including immunology, microbiology, virology, molecular medicine, animal science, molecular biology and biochemistry or highly competitive jobs as research technicians, laboratory assistants or sales representatives with a pharmaceutical company.

What is Immunology and Infectious Disease?

Immunology and Infectious Disease is the study of how the body copes with bacterial, viral, or parasitic infections, cancer, autoimmune disease and other diseases of the immune system. The immune system protects us from infection through is a complex network of cells and tissues designed to fight invading pathogens. Immunology is the study of the response of the immune system to bacterial, viral or parasitic infections.

It is also the study of diseases caused by disorders of the immune system. Autoimmune diseases are diseases that cause your immune system to attack your own body. Immunodeficiency disease is a result of failure of the immune system to function in its normal capacity. Allergy is a result of the immune system responding to substances that are not usually harmful. Immunology also covers the development of the immune system as well as the malignant growth of immune cells, and the epidemiology of infectious disease.

You Might Like This Program If...

- You are interested in studying mechanisms of human disease progression at the molecular, cellular, and whole organism levels, and how these diseases are impacted by components of the immune system

- You are looking for opportunities to perform research in the laboratories of faculty in areas of immune cell development, inflammation, autoimmune disease, cancer biology, and infectious disease