



Applied Immunology Services Section Home

History

The history of applied immunology is intertwined with the pursuit of understanding the immune system's remarkable ability to protect the body from infections and diseases. While the concept of immunity dates back centuries, the formal understanding of immunological reactions and their application in medicine began to take shape in the late 19th and early 20th centuries.

One of the earliest milestones in immunology was Edward Jenner's development of the smallpox vaccine in the late 18th century. By using cowpox to induce immunity against smallpox, Jenner laid the foundation for the field of vaccination and demonstrated the principle of immunization.

In the late 19th century, Emil von Behring's work on serum therapy marked a turning point in immunology. Von Behring's discovery of antitoxins and their role in providing immunity against diseases earned him the first Nobel Prize in Physiology or Medicine in 1901.

Edward Jenner

Known as the "Father of Immunology," Jenner's work on vaccination laid the groundwork for modern immunization.

2.

Paul Ehrlich

Coined the term "antibody" and developed the side-chain theory, contributing to the understanding of immune responses.

4.

Karl Landsteiner

Discovered blood groups and ABO antigens, leading to safer blood transfusions.

6.

Georges Köhler and César Milstein

Pioneered monoclonal antibody technology, revolutionizing immunology and diagnostics.

Industrial Applications of Applied Immunology

The impact of applied immunology spans across a wide range of industries:

1.

Medical Diagnostics

Using antibodies to detect diseases, pathogens, and biomarkers for diagnostic purposes.

3.

Autoimmune Disease Treatment

Developing therapies to modulate immune responses and treat autoimmune disorders.

5.

Monoclonal Antibody Therapies

Using engineered antibodies to treat various diseases, including cancer and autoimmune disorders.

7.

Immunodiagnostic Kits

Creating test kits for rapid and accurate disease detection.

9.

Infectious Disease Control

Developing diagnostic tests and therapies for emerging infectious diseases.

11.

Biosecurity and Bioterrorism Preparedness

Detecting and responding to biothreat agents.

13.

Gut Microbiome and Immunology

Studying the interaction between gut microbes and the immune system.

15.

Food Safety Testing

Detecting foodborne pathogens using immunological methods.

17.

Immunogenetics

Studying the genetic basis of immune responses and disease susceptibility.

19.

Environmental Immunology

Studying how environmental factors influence immune function.

Personalized Immunotherapy

Tailoring immunotherapies based on individual immune profiles.

2.

Neoantigen Targeting

Identifying and targeting unique cancer-specific antigens.

4.

Microbiome Immunology

Understanding how the microbiome interacts with the immune system.

6.

Advanced Diagnostics

Utilizing high-throughput technologies for rapid and precise disease detection.

8.

Neuroimmunology Advances

Developing therapies for neuroinflammatory and neurodegenerative disorders.

10.

Synthetic Immunology

Designing novel immune responses and pathways for therapeutic purposes.

12.

Tumor Microenvironment

Understanding interactions between immune cells and tumor cells.

14.

Immunomonitoring

Developing methods to monitor immune responses during treatments.

16.

Predictive Immunology

Using computational models to predict immune responses and outcomes.

18.

Regenerative Immunology

Combining immunology with regenerative medicine for tissue repair.

20.