

■ Immunology 201

OVERVIEW

Immunology 201 builds on Immunology 101 class to describe the two types of immune systems, the non-specific immune system, and the specific immune system. This class puts all the immune system details into practice, taking you on a journey from how disease occurs to how your body fights it. By understanding this complex process, you will better understand how these steps are exploited by the biopharma industry to create cutting-edge immunotherapies in biotechnology.

Five Takeaways:

1. List of immune response functions.
2. Explanation of how the non-specific immune system recognizes, responds to, and eliminates a pathogens.
3. Road map of the specific immune cell types, their functions, and how they eliminate pathogens and cancer.
4. In-depth understanding of how the immune system's memory B-cells and T-cells fight reinfection.
5. Roll of cytokines and why/how cytokine storms occur.

AGENDA

Non-Specific Immunity

- Primary and secondary defense response
- Roles of host defense proteins, neutrophils, eosinophils, macrophages, cytokines
- PRR, PAMP, DAMP interactions and functions
- Cytokine activation of immune cells

Specific Immunity

- Specific immune response
- Components of the specific immunity
- Roles of immunogens, antigens, epitopes
- B-cell structures and functions
 - Plasma cells, memory B-cells, antibodies
- T-cell structures and functions
 - Cytotoxic T-cells, helper T-cells, memory T-cells
- Role of cytotoxins

Immune System Activation: Putting It All Together

- Pathogen exposure
- Macrophage engagement
- Macrophage activation by PAMP
- Macrophage present immunogen
- Helper T-cell recognize presented immunogen to release cytokines
- B-cell activation
- Plasma B-cells and antibody release
- Memory B-cell production

