

Chapter 43 – The Immune System

Reading Questions

- 1) List two lines of nonspecific defense mechanisms with examples of each.

- 2) What is meant by specific defense?

- 3) Give examples of “barrier defense”.

- 4) What is the role of phagocytic leukocytes?

- 5) What is the role of the lymphatic system? (note: you may have to refer to chapter 42)

- 6) How does the lymphatic system aid in immunity?

- 7) Describe the events that occur during an inflammatory response.

- 8) What is an antigen?

- 9) Identify the key differences between the following lymphocytes:

a. B lymphocytes _____

b. T lymphocytes _____

10) What is the role of MHC (major histocompatibility complex)?

11) What is the role of cytotoxic T cells? Describe their mechanism of action.

12) Describe the role and actions of helper T cells.

13) How do B cells become activated? When they are activated, what do they do?

14) List and describe four ways antibodies aid in immunity.

15) Describe how an allergy develops and how it affects your immune system.

16) Propose a possible reason why there may be a small percentage of people who have a natural immunity to HIV?

Study Questions

1. Match the description with the correct compound or process.

- | | | |
|---------------|----------------|-----------------|
| A) Antibodies | E) Histamine | I) Phagocytosis |
| B) Antigen | F) Interferons | J) Pyrogens |
| C) Complement | G) Lysozyme | |
| D) Cytokines | H) Perforin | |

- _____ Enzyme that digests the cell walls of many kinds of bacteria; present in some mucus secretions
- _____ Ingestion of invading organisms by certain types of white blood cells
- _____ Released by basophils and mast cells in response to tissue injury; triggers dilation and increased permeability of nearby capillaries
- _____ Molecules that set the body's thermostat at a higher temperature
- _____ Group of 20 or more blood proteins that cooperate with other defense mechanisms; may amplify inflammation, enhance phagocytosis or lyse pathogens; activated by immune response or exposure to antigens
- _____ Proteins produced by virus-infected cells; induce other cells to produce chemicals that inhibit viral reproduction
- _____ Foreign molecule that triggers a specific response by lymphocytes
- _____ Proteins, produced by plasma cells that bind to specific antigens
- _____ Proteins or peptides that serve to stimulate lymphocytes
- _____ Protein that forms pores in a target cell's membrane

2. Match the description/function with the correct cell.

- | | | |
|----------------------|-------------------|-----------------------|
| A) B lymphocytes | F) Mast cells | K) NK cells |
| B) Basophils | G) Memory B cells | L) Plasma cells |
| C) Cytotoxic T cells | H) Memory T cells | M) Suppressor T cells |
| D) Eosinophils | I) Monocytes | N) T lymphocytes |
| E) Helper T cells | J) Neutrophils | |

- _____ 60% to 70% of all white blood cells; phagocytic cells; engulf and destroy microbes in infected tissues
- _____ 5% of all white blood cells; exit circulation and enlarge to become macrophages; engulf and destroy bacteria and dead cells
- _____ 1.5% of all white blood cells; defense against larger parasitic invaders; target foreign compounds or pathogens coated with antibodies
- _____ Lymphocytes that destroy virus-infected body cells and abnormal cells; destroy cells by attacking the cell's membrane and causing the cell to rupture
- _____ Cells found in connective tissue that produce and release histamine
- _____ White blood cells that produce and release histamine
- _____ Lymphocytes responsible for antibody-mediated immunity
- _____ Cells that produce antibodies; derived from B cells
- _____ Lymphocytes responsible for cell-mediated immunity
- _____ Cells held in reserve; differentiate to form plasma cells with second exposure to antigen
- _____ Responsible for cell-mediated immunity; track down and attack bacteria, fungi, protozoa and foreign tissues that contain targeted antigen
- _____ Release cytokines that coordinate specific & nonspecific defenses and stimulate cell-mediated and antibody-mediated immunity

- _____ Remain in reserve; differentiate into cytotoxic T cells with second exposure to antigen
- _____ Depress the action of other T cells and B cells by secreting suppression factors; limit the degree of the immune system action in response to a single exposure to an antigen

3. How are lymphocytes able to distinguish self from nonself?

4. How is the primary immune response different from the secondary immune response?

Primary Immune Response	Secondary Immune Response

5. How is active immunity different from passive immunity?

Active Immunity	Passive Immunity

6. Match the description with the correct term.

- | | |
|--------------|-----------------------------|
| A. Allergens | C. Autoimmune disorders |
| B. Allergies | D. Immunodeficiency disease |

- _____ Immune system fails to develop normally or the immune response is blocked
- _____ Develop when the immune response mistakenly targets normal body cells & tissues
- _____ Inappropriate or excessive immune responses to antigens
- _____ Antigens that trigger allergic reactions
- _____ AIDS/HIV
- _____ Psoriasis, rheumatoid arthritis, myasthenia gravis, multiple sclerosis, narcolepsy, Type 1 diabetes, Graves' disease, Addison's disease, pernicious anemia, lupus