

Immunology Fundamentals Quiz

Immunology · Answer Key · 15 Questions

1. Which of the following cells are primarily responsible for producing antibodies?

- A) Cytotoxic T lymphocytes
- B) Dendritic cells
- C) Plasma cells**
- D) Natural killer cells

2. The major histocompatibility complex (MHC) class I molecules are found on the surface of virtually all nucleated cells and present peptide fragments derived from:

- A) Extracellular pathogens
- B) Intracellular pathogens**
- C) Exogenous antigens
- D) Self-proteins

3. Which immunoglobulin (antibody) is the most abundant in serum and plays a crucial role in neutralizing toxins and marking pathogens for destruction?

- A) IgA
- B) IgG**
- C) IgE
- D) IgM

4. T helper cells (CD4+) are crucial for orchestrating the adaptive immune response by interacting with:

- A) MHC class I molecules
- B) MHC class II molecules**
- C) B cell receptors
- D) Antibodies

5. Opsonization is a process where antibodies or complement proteins bind to pathogens, enhancing their recognition and engulfment by phagocytic cells. Which complement protein is a potent opsonin?

- A) C1q
- B) C3b**
- C) C5a
- D) C9

6. Antigen-presenting cells (APCs) like dendritic cells present processed antigens to T lymphocytes primarily through:

- A) Secreted cytokines
- B) Cell-surface MHC molecules**
- C) Direct cell-to-cell contact without MHC
- D) Antigen-antibody complexes

7. Which type of hypersensitivity reaction is characterized by immediate allergic reactions mediated by IgE antibodies binding to mast cells and basophils?

- A) Type II (Cytotoxic)
- B) Type III (Immune Complex)
- C) Type I (Immediate)**
- D) Type IV (Delayed)

8. The primary immune response is characterized by:

- A) A rapid and strong antibody production
- B) A slower onset and lower magnitude of antibody production compared to the secondary response**
- C) The production of memory cells without initial antibody response
- D) Immediate activation of all lymphocytes

9. Cytokines are small proteins that act as signaling molecules in the immune system. Which cytokine is a key mediator of inflammation and fever?

- A) Interleukin-10 (IL-10)
- B) Tumor Necrosis Factor-alpha (TNF-?)**
- C) Interleukin-2 (IL-2)
- D) Interferon-gamma (IFN-?)

10. The process by which immature T lymphocytes are selected in the thymus to ensure they can recognize self-MHC molecules and not react strongly against self-antigens is called:

- A) Affinity maturation
- B) Clonal deletion
- C) Central tolerance**
- D) Peripheral tolerance

11. Which of the following is a characteristic feature of the innate immune system?

- A) Specificity for particular antigens
- B) Development of immunological memory
- C) Rapid response to a broad range of pathogens**
- D) Requires prior exposure to an antigen

12. The alternative and lectin pathways of complement activation are considered part of the innate immune response because they can be triggered by:

- A) Antibodies bound to antigens
- B) Specific antigen-MHC complexes
- C) Microbial surface molecules or host lectins**
- D) T cell activation

13. Vaccination primarily works by stimulating which aspect of the immune system?

- A) Innate immunity only
- B) Humoral immunity and adaptive memory**
- C) Complement system activation
- D) Phagocytosis by neutrophils

14. Which organ is the primary site for the development and maturation of T lymphocytes?

- A) Bone marrow
- B) Spleen
- C) Thymus**
- D) Lymph nodes

15. Apoptosis, or programmed cell death, is a critical mechanism used by cytotoxic T lymphocytes and NK cells to eliminate infected or cancerous cells. This process is characterized by:

- A) Inflammation and cell lysis
- B) Cell swelling and rupture
- C) Shrinkage of the cell, chromatin condensation, and formation of apoptotic bodies**
- D) Uncontrolled cell division