

## Immunology Quiz Answer Key PDF

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**Which cell type is primarily responsible for producing antibodies?**

- A. T Cells
- B. B Cells ✓**
- C. Macrophages
- D. Neutrophils

**Which of the following are types of vaccines? (Select all that apply)**

- A. Live-attenuated ✓**
- B. Inactivated ✓**
- C. Subunit ✓**
- D. Antibiotic

**What role do cytokines play in the immune system? Provide examples.**

**Cytokines play a critical role in the immune system by facilitating communication between cells, regulating immune responses, and orchestrating inflammation. Examples include interleukins (IL-1, IL-6), interferons (IFN- $\alpha$ , IFN- $\beta$ ), and tumor necrosis factor (TNF- $\alpha$ ).**

**Discuss the concept of herd immunity and its significance in public health.**

**Herd immunity occurs when a large percentage of a population becomes immune to an infectious disease, thereby reducing its spread and protecting those who are not immune. This concept is significant in public health as it helps to control and potentially eradicate diseases, ensuring community safety and health.**

**Which of the following is a characteristic of innate immunity?**

- A. Memory response
- B. Specificity to antigens

**C. Immediate response ✓**

D. Delayed response

**Which class of MHC molecules is found on all nucleated cells?**

**A. Class I ✓**

B. Class II

C. Class III

D. Class IV

**Which cells are part of the adaptive immune system? (Select all that apply)**

**A. T Cells ✓**

**B. B Cells ✓**

C. Neutrophils

D. Dendritic Cells

**Which mechanisms do pathogens use to evade the immune system? (Select all that apply)**

**A. Antigenic variation ✓**

**B. Inhibition of complement activation ✓**

C. Phagocytosis

**D. Suppression of immune response ✓**

**Which cells are involved in antigen presentation? (Select all that apply)**

**A. Macrophages ✓**

**B. Dendritic Cells ✓**

**C. B Cells ✓**

D. Red Blood Cells

**What is the primary function of natural killer (NK) cells?**

A. Produce antibodies

B. Present antigens

**C. Destroy infected or cancerous cells ✓**

D. Activate T cells

**Which cytokine is known for its antiviral properties?**

A. Interleukin-2

**B. Interferon ✓**

C. Tumor Necrosis Factor

D. Interleukin-10

**Explain the difference between innate and adaptive immunity.**

**Innate immunity is the immediate, non-specific defense mechanism present at birth, including barriers like skin and immune cells like macrophages. In contrast, adaptive immunity is a specific response that develops after exposure to a pathogen, involving lymphocytes (such as B and T cells) and the formation of immunological memory.**

**Which of the following is a primary lymphoid organ?**

A. Spleen

B. Lymph Node

**C. Thymus ✓**

D. Tonsils

**Which of the following are functions of antibodies? (Select all that apply)**

**A. Neutralization of pathogens ✓**

**B. Opsonization ✓**

C. Antigen presentation

**D. Activation of complement system ✓**

**Describe the process of clonal selection and expansion in the adaptive immune response.**

**When an antigen enters the body, it binds to specific receptors on B or T cells that recognize it. This binding activates the lymphocytes, leading to their clonal expansion, where they proliferate and differentiate into effector cells (such as plasma cells for B cells or cytotoxic T cells) that can effectively eliminate the pathogen.**

**How does the body achieve immune tolerance, and why is it important?**

The body achieves immune tolerance through processes like central tolerance, where self-reactant T cells are eliminated in the thymus, and peripheral tolerance, where regulatory T cells suppress immune responses to self-antigens. This is important to prevent autoimmune diseases and ensure the immune system does not attack the body's own cells.

**Which of the following is NOT a type of hypersensitivity reaction?**

- A. Type I
- B. Type II
- C. Type III
- D. Type V ✓**

**What type of immunity is provided by vaccines?**

- A. Innate Immunity
- B. Passive Immunity
- C. Adaptive Immunity ✓**
- D. Autoimmunity

**Which of the following are autoimmune diseases? (Select all that apply)**

- A. Rheumatoid Arthritis ✓**
- B. Lupus ✓**
- C. Asthma
- D. Type 1 Diabetes ✓**

**What are the main challenges in developing vaccines for rapidly mutating viruses like influenza?**

The main challenges in developing vaccines for rapidly mutating viruses like influenza include the virus's ability to change its surface proteins frequently, making it difficult to create a long-lasting vaccine, and the need for timely updates to the vaccine formulation to match the most prevalent strains.