

## Chapter 1. Introduction to Immunity and the Immune System

### Multiple Choice

*Identify the choice that best completes the statement or answers the question.*

- \_\_\_\_ 1. Eosinophils are involved in the immune response against:
  - A. viruses.
  - B. intracellular bacteria.
  - C. parasites that cannot be phagocytized.
  - D. extracellular bacteria.
  
- \_\_\_\_ 2. Which of the following are components of both innate and adaptive immune responses?
  - A. Immunoglobulins
  - B. T helper cells
  - C. Macrophages
  - D. B cells
  
- \_\_\_\_ 3. The process by which leukocytes are attracted to a specific area by chemical messengers is called:
  - A. diapedesis.
  - B. degranulation.
  - C. chemotaxis.
  - D. opsonization.
  
- \_\_\_\_ 4. Which of the following is a characteristic of natural killer cells?
  - A. They mature in the thymus.
  - B. They are smaller than B and T cells.
  - C. They are a type of lymphocyte.
  - D. They are part of the adaptive immune system.
  
- \_\_\_\_ 5. Which of the following best describes diapedesis?
  - A. Movement toward increasing concentrations of a cytokine
  - B. Attachment of immunoglobulin to target cells
  - C. Movement through blood vessel walls as cells exit the circulation
  - D. Engulfment of target cells
  
- \_\_\_\_ 6. The most effective phagocytic and antigen-presenting cell is the:
  - A. neutrophil.
  - B. monocyte.
  - C. dendritic cell.
  - D. macrophage.
  
- \_\_\_\_ 7. Which of the following is characteristic of natural immunity?
  - A. It involves memory.
  - B. T lymphocytes play a major role.
  - C. It involves specificity.
  - D. Mechanisms are always present and fully functional.
  
- \_\_\_\_ 8. All of the following cells are considered part of natural immunity EXCEPT:
  - A. eosinophils.
  - B. B lymphocytes.
  - C. monocytes.
  - D. neutrophils.

- \_\_\_\_ 9. Where does the specific immune response to a foreign antigen mainly occur?
- A. Lymph nodes
  - B. Blood
  - C. Bone marrow
  - D. Skin
- \_\_\_\_ 10. Which white cell in the peripheral blood migrates into tissue to become a macrophage?
- A. Eosinophil
  - B. Basophil
  - C. Neutrophil
  - D. Monocyte
- \_\_\_\_ 11. A white blood cell that is 16 to 18 micrometers in diameter, has a horseshoe-shaped nucleus, and is capable of phagocytosis is a:
- A. neutrophil.
  - B. eosinophil.
  - C. basophil.
  - D. monocyte.
- \_\_\_\_ 12. Pasteur's discovery that older bacterial cultures would not cause disease in chickens but would protect them from subsequent infection with more virulent strains is an example of:
- A. attenuated vaccine.
  - B. natural immunity.
  - C. passive immunity.
  - D. cross-immunity.
- \_\_\_\_ 13. Antibodies are secreted by:
- A. plasma cells.
  - B. B cells.
  - C. T cells.
  - D. dendritic cells.
- \_\_\_\_ 14. Which of the following is characteristic of mucosal-associated lymphoid tissue?
- A. It is one of the primary lymphoid organs.
  - B. It clears pathogens from the bloodstream.
  - C. It includes the tonsils and the appendix.
  - D. It includes the liver and spleen.
- \_\_\_\_ 15. Acquired (adaptive) immunity can be characterized as:
- A. nonspecifically activated.
  - B. immediately responsive.
  - C. neutrophil dependent.
  - D. involving memory.
- \_\_\_\_ 16. Which of the following is NOT a characteristic of neutrophils?
- A. Congregate in the marginating pool in blood vessels
  - B. Capable of diapedesis
  - C. Granules that become bright orange with Wright stain
  - D. Segmented nucleus
- \_\_\_\_ 17. The function of NK cells is to:
- A. produce antibody.

- B. phagocytize bacteria.
  - C. present antigen to T cells.
  - D. kill target cells such as tumor and virally infected cells.
- \_\_\_\_\_ 18. All of the following are involved in adaptive immunity EXCEPT:
- A. memory.
  - B. lymphocytes.
  - C. specificity.
  - D. neutrophils.
- \_\_\_\_\_ 19. Which of the following is NOT a characteristic of a lymph node?
- A. Filters interstitial fluid draining from tissues
  - B. Colonized with T and B cells
  - C. Between 1 and 25 mm in size
  - D. Considered a primary or central lymphoid organ
- \_\_\_\_\_ 20. All of the following are considered part of natural immunity EXCEPT:
- A. eosinophils.
  - B. lymphocytes.
  - C. acute-phase reactants.
  - D. neutrophils.
- \_\_\_\_\_ 21. Macrophages that migrate to the liver are called:
- A. alveolar macrophages.
  - B. histiocytes.
  - C. microglial cells.
  - D. Kupffer cells.
- \_\_\_\_\_ 22. Innate immunity can be characterized as:
- A. specific.
  - B. slow to respond.
  - C. dependent upon neutrophils and macrophages.
  - D. involving memory.
- \_\_\_\_\_ 23. The ability to resist infection through normally present body functions best characterizes:
- A. autoimmunity.
  - B. natural immunity.
  - C. acquired immunity.
  - D. alloimmunity.
- \_\_\_\_\_ 24. Which type of cell has a diameter between 10 and 15 micrometers, has a multi-lobed nucleus, and usually comprises more than 50% of circulating leukocytes?
- A. Neutrophil
  - B. Lymphocyte
  - C. Basophil
  - D. Monocyte
- \_\_\_\_\_ 25. Which of the following is NOT a component or characteristic of natural (innate) immunity?
- A. Repeated exposure to a pathogen does not change the response.
  - B. The response involves acute-phase reactants.
  - C. The response involves phagocytosis.
  - D. The response involves antibodies.

- \_\_\_\_ 26. T cells are mainly concentrated in which region of the lymph nodes?
- A. Primary follicles
  - B. Secondary follicles
  - C. Paracortex
  - D. Medulla
- \_\_\_\_ 27. A primary site of antigen trapping and presentation to immune cells is the:
- A. spleen.
  - B. thymus.
  - C. bone marrow.
  - D. brain.
- \_\_\_\_ 28. Hematopoietic stem cells are located in:
- A. the lymph nodes.
  - B. the spleen.
  - C. bone marrow.
  - D. the thymus.
- \_\_\_\_ 29. Which of the following is NOT a characteristic or function of the spleen?
- A. Removes old red blood cells from the circulation
  - B. Filters infectious agents and foreign matter from the blood
  - C. Less than 25 mm in size
  - D. Is considered a secondary lymphoid organ
- \_\_\_\_ 30. T cells mature in:
- A. bone marrow.
  - B. the thymus.
  - C. the lymph nodes.
  - D. the spleen.
- \_\_\_\_ 31. Primary lymphoid organs include which of the following?
- A. Spleen
  - B. Tonsils
  - C. Thymus
  - D. Lymph nodes
- \_\_\_\_ 32. B cells that are actively responding to antigen can be found in:
- A. peripheral blood.
  - B. the primary follicles.
  - C. the germinal centers.
  - D. bone marrow.
- \_\_\_\_ 33. Contact with antigen and activation of B cells normally occurs in:
- A. peripheral blood.
  - B. the connective tissue.
  - C. the thymus.
  - D. the lymph nodes.
- \_\_\_\_ 34. Which best describes lymph nodes?
- A. They line the interior of small blood vessels.
  - B. They are concentrated where appendages join the thorax of the body.
  - C. They are approximately 12 cm in size.
  - D. They are considered primary or central lymphoid organs.

- \_\_\_\_ 35. Which of the following is a characteristic of opsonins?
- A. They are carbohydrates that stimulate T cells.
  - B. They are molecules that coat bacteria, making them more susceptible to phagocytosis.
  - C. They are expressed on the surface of neutrophils.
  - D. They are produced by NK cells.
- \_\_\_\_ 36. "Cluster of differentiation" refers to:
- A. a category of cell surface proteins used to identify cell types.
  - B. aggregates of differentiating stem cells.
  - C. groups of antigens that identify a cell as foreign.
  - D. the cells that congregate in germinal centers.
- \_\_\_\_ 37. All of the following are commonly found within non-lymphoid tissues EXCEPT:
- A. B cells.
  - B. macrophages.
  - C. mast cells.
  - D. dendritic cells.

### Matching

*Match each scientist with the appropriate immunological discovery.*

- A. Elie Metchnikoff
- B. Edward Jenner
- C. Emil Von Behring
- D. Almoth Wright

- \_\_\_\_ 38. Vaccination
- \_\_\_\_ 39. Opsonization
- \_\_\_\_ 40. Humoral immunity
- \_\_\_\_ 41. Phagocytosis

## **Chapter 1. Introduction to Immunity and the Immune System**

### **Answer Section**

#### **MULTIPLE CHOICE**

- |            |        |
|------------|--------|
| 1. ANS: C  | PTS: 1 |
| 2. ANS: C  | PTS: 1 |
| 3. ANS: C  | PTS: 1 |
| 4. ANS: C  | PTS: 1 |
| 5. ANS: C  | PTS: 1 |
| 6. ANS: C  | PTS: 1 |
| 7. ANS: D  | PTS: 1 |
| 8. ANS: B  | PTS: 1 |
| 9. ANS: A  | PTS: 1 |
| 10. ANS: D | PTS: 1 |
| 11. ANS: D | PTS: 1 |
| 12. ANS: A | PTS: 1 |
| 13. ANS: A | PTS: 1 |
| 14. ANS: C | PTS: 1 |
| 15. ANS: D | PTS: 1 |
| 16. ANS: C | PTS: 1 |
| 17. ANS: D | PTS: 1 |
| 18. ANS: D | PTS: 1 |
| 19. ANS: D | PTS: 1 |
| 20. ANS: B | PTS: 1 |
| 21. ANS: D | PTS: 1 |
| 22. ANS: C | PTS: 1 |
| 23. ANS: B | PTS: 1 |
| 24. ANS: A | PTS: 1 |
| 25. ANS: D | PTS: 1 |
| 26. ANS: C | PTS: 1 |
| 27. ANS: A | PTS: 1 |
| 28. ANS: C | PTS: 1 |
| 29. ANS: C | PTS: 1 |
| 30. ANS: B | PTS: 1 |
| 31. ANS: C | PTS: 1 |
| 32. ANS: C | PTS: 1 |
| 33. ANS: D | PTS: 1 |
| 34. ANS: B | PTS: 1 |
| 35. ANS: B | PTS: 1 |
| 36. ANS: A | PTS: 1 |
| 37. ANS: A | PTS: 1 |

#### **MATCHING**

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|-----|--------|--------|
| 38. | ANS: B | PTS: 1 |
| 39. | ANS: D | PTS: 1 |
| 40. | ANS: C | PTS: 1 |
| 41. | ANS: A | PTS: 1 |