# *Clinical Immunology and Serology 5th edition Miller Test Bank*

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# Chapter 02 Innate Immunity

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

____ 1. Which of the following is an internal defense mechanism?
a. Keratin coating epithelial cells
b. Lactic acid in sweat
c. Surfactant in mucosal secretions
d. Phagocytosis

____ 2. A pathogen killed by psoriasin was defeated by which of the following defense mechanisms?
a. External, adaptive immunity
b. External, innate immunity
c. Internal, adaptive immunity
d. Internal, innate immunity

____ 3. A pathogen entering the respiratory tract would encounter which external defense mechanism?
a. Phagocytosis
b. Movement of cilia
c. Hydrochloric acid
d. Lactic acid

____ 4. A pathogen entering the urinary tract would encounter which external defense mechanism?
a. Acidity
b. Surfactants
c. Keratin
d. Lysozyme

____ 5. Normal flora is best described by which of the following statements?
a. One type of bacteria that is normally present and never causes disease
b. A mix of bacteria that are normally present that never cause disease
c. A mix of bacteria that are normally present and do not typically cause disease
d. One type of bacteria that is normally present and that we constantly are defending against

____ 6. Inflammatory bowel syndrome may be better understood by looking at which of the following?
a. Interaction between the innate immune system and the gut microbiome
b. Interaction between the innate immune system and Candida albicans
c. Interaction between the adaptive immune system and the gut microbiome
d. Interaction between the adaptive immune system and Candida albicans

____ 7. Which of the following is a pattern-associated molecular pattern (PAMP) found on gram-negative bacteria?
a. Peptidoglycan
b. Zymosan
c. Flagellin
d. Lipoproteins

____ 8. Which of the following cells are capable of recognizing PAMPs?
a. B lymphocytes
b. Basophils
c. Macrophages
d. T lymphocytes

____ 9. Which of the following describes the role of PRRs in adaptive immunity?
a. Promotes release of cytokines and chemokines
b. Activation of phagocytic cells
c. Activation of inflammation
d. Recruitment of additional phagocytic cells

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____ 10. Which best describes the process of a neutrophil recognizing zymosan and phagocytosing a pathogen?
a. An adaptive immune response to a gram-negative bacterial invasion
b. An innate immune response to a yeast invasion
c. An innate immune response to a gram-negative bacterial invasion
d. An adaptive immune response to a gram-positive bacterial invasion

____ 11. The highest concentration of Toll-like receptors (TLRs) would be found in which of the following cells?
a. Dendritic cells
b. Neutrophils
c. Eosinophils
d. Lymphocytes

____ 12. Which of the following TLRs is found on cell surfaces?
a. TLR 3
b. TLR 7
c. TLR 9
d. TLR 2

____ 13. Acute phase reactants act by doing which of the following?
a. Promoting destruction by releasing proteolytic enzymes
b. Promoting adherence to pathogens
c. Limiting phagocytosis
d. Limiting adherence to pathogens

____ 14. Acute phase reactants contribute to innate immunity most through their involvement in which of the following processes?
a. Destruction of blood clots
b. Surfactant secretion
c. Phagocytosis
d. Decreasing Ph

____ 15. Which of the following acute phase reactants are capable of opsonization?
a. C-reactive protein
b. Serum amyloid A (SAA)
c. Alpha 1- Antitrypsin (AAT)
d. Fibrinogen

____ 16. Which of the following acute phase reactants can lyse cells?
a. C-reactive protein
b. Complement
c. Haptoglobin
d. SAA

____ 17. Which acute phase reactant rises most significantly in bacterial infections?
a. Ceruloplasmin
b. Haptoglobin
c. Fibrinogen
d. SAA

____ 18. Measurement of C-reactive protein is an established tool in the analysis of which disease?
a. Cardiovascular disease
b. Irritable bowel syndrome
c. Crohn's disease
d. Coronary artery disease

____ 19. Which of the following occurs during an inflammatory response?
a. Constriction of the blood vessels
b. Decreased permeability of fluid through the vessels
c. Diapedesis
d. Migration of macrophages within 30 mins.

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____ 20. Which inflammatory response is responsible for the symptom of swelling?
a. Phagocytosis
b. Increased permeability of fluid through vessels
c. Diapedesis
d. Increased blood flow to area

____ 21. Which of the following phagocytic steps should occur after the others?
a. Formation of phagosome
b. Release of lysosomal contents
c. Outflowing of cytoplasm
d. Fusion of lysosomal granules

____ 22. Which of the following is responsible for digestion of microorganisms through phagocytosis?
a. Phagosome
b. Exocytosis
c. Lactic acid
d. Hydrolytic enzymes

____ 23. What is the importance of lysosomal granules in phagocytc cells?
a. Proteolytic enzymes are needed for digestion of pathogens
b. Myeloperoxidase is needed or the invagination of the pathogen
c. Proteolytic enzymes are needed to migrate the phagosome to the center of the cell
d. Proteolytic enzymes are needed to fuse granules to the phagosome

____ 24. How do phagocytic cells get pathogens inside their cytoplasm?
a. Adhesion to selectins
b. Chemotaxis
c. Invagination with pseudopods from the cytoplasm
d. Release of proteolytic enzymes from granules

____ 25. Phagocytosis is a critical part of which of the following?
a. Innate, specific, internal defense mechanism
b. Innate, non-specific, internal defense mechanism
c. Innate, non-specific, external defense mechanism
d. Adaptive, specific, internal defense mechanism

____ 26. How does phagocytosis contribute to adaptive immunity?
a. Neutrophils present peptides from pathogens to T cells
b. Neutrophils present peptides from pathogens to B cells
c. Macrophages present peptides from pathogens to B cells
d. Macrophages present peptides from pathogens to T cells

____ 27. Which of the following would best describe the role of NK cells in innate immunity?
a. A school hall monitor
b. A school custodian
c. A school morning greeter
d. A school principal

____ 28. NK cells routinely check cells for _____ to determine if they are healthy?
a. Class II major histocompatibility complex
b. Perforins
c. Class I major histocompatibility complex
d. Granzymes

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____ 29. Which of the following is a substance released by NK cells and causes channeling into a target cell's membrane?
a. Granzymes
b. Lactic acid
c. Myeloperoxidase
d. Perforins

____ 30. If an NK cell ultimately deems a host cell as unhealthy or infected, the result is:
a. phagocytosis
b. cell lysis
c. inflammatory response
d. T cell activation

____ 31. Innate lymphoid cells (ILCs) are found primarily where in our bodies?
a. Peripheral blood
b. Bone marrow
c. Mucosal sites
d. Tissues

____ 32. The primary function of innate lymphoid cells (ILCs)is:
a. release of cytokines
b. phagocytosis
c. cell lysis
d. inflammation

____ 33. Inhibitory receptors, such as killer cell immunoglobulin-like receptors (KIRs), on the surface of NK cells bind to which of the following molecules?
a. Toll-like receptors
b. MHC Class I
c. Defensins
d. Immunoglobulins

____ 34. All of the following are true of dendritic cells except:
a. they ingest both whole microorganisms and injured/dead host cells by phagocytosis
b. they are capable of presenting pathogen-derived peptide to T cells after phagocytosis
c. they express TLRs
d. all of the responses are true of dendritic cells

____ 35. Which of the following is true of C-type lectin receptors (CLRs)?
a. CLRs are involved in recognition of intracellular pathogens
b. CLRs are expressed predominantly by NK cells
c. When bound to mannan or β-glucans on fungal cell walls, CLRs result in the production of cytokines and chemokines
d. CLRs are found on both the plasma membrane and in the cytoplasm of innate immune cells

Chapter 02 Innate Immunity
Answer Section

**MULTIPLE CHOICE**

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

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