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

Multiple Choice

1. Eosinophils are involved in the immune response against:

A. viruses.

B. intracellular bacteria.

C. parasites that cannot be phagocytized.

D. extracellular bacteria.

ANS: C

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

ANS: C

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.

ANS: C

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.

ANS: C

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

ANS: C

6. The most effective phagocytic and antigen-presenting cell is the:

A. neutrophil.

B. monocyte.

C. dendritic cell.

D. macrophage.

ANS: C

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.

ANS: D

8. All of the following cells are considered part of natural immunity EXCEPT:

A. eosinophils.

B. B lymphocytes.

C. monocytes.

D. neutrophils.

ANS: B

9. Where does the specific immune response to a foreign antigen mainly occur?

A. Lymph nodes

B. Blood

C. Bone marrow

D. Skin

ANS: A

10. Which white cell in the peripheral blood migrates into tissue to become a macrophage?

A. Eosinophil

B. Basophil

C. Neutrophil

D. Monocyte

ANS: D

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.

ANS: D

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.

ANS: A

13. Antibodies are secreted by:

A. plasma cells.

B. B cells.

C. T cells.

D. dendritic cells.

ANS: A

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.

ANS: C

15. Acquired (adaptive) immunity can be characterized as:

A. nonspecifically activated.

B. immediately responsive.

C. neutrophil dependent.

D. involving memory.

ANS: D

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

ANS: C

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.

ANS: D

18. All of the following are involved in adaptive immunity EXCEPT:

A. memory.

B. lymphocytes.

C. specificity.

D. neutrophils.

ANS: D

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

ANS: D

20. All of the following are considered part of natural immunity EXCEPT:

A. eosinophils.

B. lymphocytes.

C. acute-phase reactants.

D. neutrophils.

ANS: B

21. Macrophages that migrate to the liver are called:

A. alveolar macrophages.

B. histiocytes.

C. microglial cells.

D. Kupffer cells.

ANS: D

22. Innate immunity can be characterized as:

A. specific.

B. slow to respond.

C. dependent upon neutrophils and macrophages.

D. involving memory.

ANS: C

23. The ability to resist infection through normally present body functions best characterizes:

A. autoimmunity.

B. natural immunity.

C. acquired immunity.

D. alloimmunity.

ANS: B

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

ANS: A

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.

ANS: D

26. T cells are mainly concentrated in which region of the lymph nodes?

A. Primary follicles

B. Secondary follicles

C. Paracortex

D. Medulla

ANS: C

27. A primary site of antigen trapping and presentation to immune cells is the:

A. spleen.

B. thymus.

C. bone marrow.

D. brain.

ANS: A

28. Hematopoietic stem cells are located in the:

A. lymph nodes.

B. spleen.

C. bone marrow.

D. thymus.

ANS: C

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

ANS: C

30. T cells mature in the:

A. bone marrow.

B. thymus.

C. lymph nodes.

D. spleen.

ANS: B

31. Primary lymphoid organs include which of the following?

A. Spleen

B. Tonsils

C. Thymus

D. Lymph nodes

ANS: C

32. B cells that are actively responding to antigen can be found in the:

A. peripheral blood.

B. primary follicles.

C. germinal centers.

D. bone marrow.

ANS: C

33. Contact with antigen and activation of B cells normally occurs in the:

A. peripheral blood.

B. connective tissue.

C. thymus.

D. lymph nodes.

ANS: D

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.

ANS: B

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.

ANS: B

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.

ANS: A

37. All of the following are commonly found within non-lymphoid tissues EXCEPT:

A. B cells.

B. macrophages.

C. mast cells.

D. dendritic cells.

ANS: A

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

38. B

39. D

40. C

41. A

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