Chapter 48

1. Match each of the following.
   _____ A. Phagocytes that circulate in the blood.
   _____ B. Helper and inducer cells.
   _____ C. Source of antibody-producing cells.
   _____ D. Macrophage precursor cells.
   _____ E. Produce specific antibodies.

2. The _______ of most vertebrate cells possesses self-markers called major histocompatibility complex proteins.

3. The surface defenses of the body consist of the ____ and the mucous membranes lining the digestive and respiratory tracts.

4. ___________ diseases are those abnormal conditions in which the body's defensive cells fail to make the self versus the nonself distinction correctly, and attack the body’s own tissues.

5. The cellular defenses of vertebrates are complemented by a very effective chemical defense called the _________ system.

6. Virus-infected cells secrete a class of proteins called ________ that play a key role in body defense.

7. The immune system depends on the function of _________, which include several types of phagocytic cells and two kinds of lymphocytes.

8. T cells and B cells possess immune _______ that can recognize specific antigens.

9. ________ are molecules released by activated helper T cells.

10. Lymphocyte receptors are encoded by genes that are assembled by _______ rearrangement and mutation of the DNA.

11. Because of natural immunological ________, a mature animal’s immune system does not attack its own tissues.

12. The human immunodeficiency virus mounts a direct attack on T₄ cells by recognizing the __________ surface proteins associated with these cells.

13. The large, irregularly shaped cells that kill bacteria by digesting them are called
   A. monocytes
   B. erythrocytes
   C. macrophages
   D. bacteriophages
   E. antibodies
14. The procedure of injecting a harmless microbe in order to confer resistance to a dangerous one is called
   A. vaccinations
   B. immunity
   C. antibody modification
   D. interferon activation
   E. immunoglobulin synthesis

15. Nonself molecules called antigens cause the vertebrate system to produce proteins known as
   A. interferons
   B. antibodies
   C. complements
   D. immunoglobulins
   E. phagocytes

16. The molecule that provokes a specific immune response is
   A. antigen
   B. lymphocyte
   C. antibody
   D. lysozyme

17. In the humoral response, B cells produce plasma cells, which in turn produce large quantities of
   A. agglutinations that are specific for foreign antigens
   B. interferons specific for foreign antigens
   C. immunoglobulins specific for foreign antigens
   D. antibodies specific for foreign antigens
   E. macrophages specific for foreign antigens

18. If different types of blood are mixed together because different antibodies exist for the ABO and Rh factor antigens on the surface of red blood cells,
   A. an autoimmune reaction will occur
   B. an infection will occur
   C. an agglutination reaction will occur
   D. an inflammatory reaction will occur
   E. a temperature response will occur

19. Immune response in vertebrates and invertebrates share which of the following features?
   A. phagocytes, distinguishing self from nonself
   B. complement, lymphocytes
   C. antibodies
   D. a and b
   E. a, b, and c
20. All of the following are defense mechanisms employed by vertebrates except
   A. specific antibodies
   B. negative test, as in, not finding self-markers
   C. skin and mucous membranes as barriers
   D. positive test to recognize presence of nonself-markers
   E. change in chromosomal composition

21. omit

22. omit

23. Which of the following is not a nonspecific defense of the vertebrate system?
   A. cells that ingest invading microbes
   B. antimicrobial proteins that kill pathogens
   C. immunoglobulin synthesis
   D. the inflammatory response
   E. the temperature response

24. The ability to digest foreign invading cells is not present in
   A. macrophages
   B. neutrophils
   C. natural killer cells
   D. T cells
   E. monocytes

25. Complement proteins can perform all of the functions except
   A. amplify inflammatory response
   B. attract phagocytes to the site of infection
   C. coat invading microbes
   D. insert themselves into the foreign cell’s plasma membrane
   E. activate interferons

26. Histamine and prostaglandins are called
   A. immunoglobulins
   B. antibodies
   C. inflammatory agents
   D. allergic agents
   E. pyrogens
27. Which of the following is not part of the inflammatory response?
   A. histamine and other chemicals are released, which produce redness, warmth, and edema
   B. neutrophils, monocytes, and macrophages attack the invading microbes and contribute to the pus
   C. antibodies and interferons are produced against the antigens
   D. invading agent causes the release of pyrogens, which produce a fever
   E. c and d

28. Allergy is a term used interchangeably with
   A. autoimmunity
   B. antibodies
   C. hypersensitivity
   D. antigen shifting

29. Immunity gained by the transfer of antibodies across the placental barrier is called
   A. passive immunity
   B. acquired immunity
   C. humoral immunity
   D. cell-mediated immunity
   E. auto immunity

30. Nonphagocytic leukocytes are
   A. neutrophils
   B. eosinophils
   C. lymphocytes
   D. basophils
   E. monocytes

31. All of the following are types of leukocytes except
   A. neutrophils
   B. eosinophils and basophils
   C. monocytes
   D. T and B cells
   E. erythrocytes

32. omit

33. The immune response is initiated by
   A. suppressor T cells
   B. cytotoxic T cells
   C. mediator T cells
   D. inducer T cells
   E. helper T cells
34. The development of T cells in the thymus is overseen by
   A. suppressor cells
   B. cytotoxic cells
   C. mediator cells
   D. inducer cells
   E. helper cells

35. MHC-II cell surface proteins are only found in
   A. macrophages, B cells, CD4+ cells
   B. erythrocytes
   C. acidophils
   D. nuetrophils
   E. a, b, and c

36. Antibodies are
   A. circulating B receptors
   B. circulating T receptors
   C. circulating self-markers
   D. circulating interferons
   E. circulating cytokines

37. Which of the following is not a part of the normal humoral immune response?
   A. IgM is produced first
   B. they activate the complement system
   C. IgA is secreted in external secretions like saliva
   D. IgG antibodies are produced
   E. they promote phagocytosis

38. The cell-mediated immune response is brought about by
   A. B cells
   B. T cells
   C. erythrocytes
   D. fibroblasts
   E. lysoyzmes
39. Individuals who lack antigens on their red blood cell surfaces are more likely to be
   A. A, Rh+
   B. B, Rh+
   C. AB, Rh+
   D. O, Rh
   E. O, Rh+

40. omit

41. Cytotoxic cells must interact for their function with
   A. MHC-I proteins
   B. MHC-II proteins
   C. foreign antigen
   D. a and b
   E. b and c

42. The antibodies that bind to antigens on a cell and cause the aggregation of complement proteins to ultimately burst the cell are
   A. IgG
   B. IgA
   C. IgD
   D. IgM
   E. IgE

43. omit

44. omit

45. omit

46. Interleukin-II activates both B cells and cytotoxic T cells. The cytotoxic cells destroy infected cells, transplanted cells, and cancer cells. Interleukin-II is secreted by
   A. macrophages
   B. thymus cells
   C. helper T cells
   D. suppressor T cells
   E. memory cells

47. Some viral pathogens evade detection by the vertebrate immune system by a mechanism that involves
   A. becoming a symbiont
   B. becoming nonvirulent
   C. frequent changing of surface antigens
   D. becoming metabolically inactive
   E. becoming a spore
48. In acquired immunologic tolerance
   A. there is the lack of an immunological response against self
   B. grafts of foreign tissue are rejected in the adult
   C. foreign tissue introduced into the embryo is not recognized as nonself
   D. embryos are implanted with immunosuppressive tissue
   E. embryos are implanted with bone from the mother

49. Which is a treatment for autoimmune disease?
   A. administration of corticosteroids
   B. administration of nonsteroidal anti-inflammatory drugs
   C. aspirin
   D. A and B
   E. A, B, C

50. Antigen shifting allows the pathogens to escape from immune recognition. This mechanism
    is employed by all of the following except
   A. flu viruses
   B. trypanosomes
   C. malarial protozoans
   D. HIV
   E. antigenic shifting occurs in all of the above

51. When a “new” antigen first challenges the immune system, if the primary immune response
    produces B cells, what are the fates of those B cells?
   A. Some of the B cells become plasma cells that secrete antibodies.
   B. Some of the B cells become memory cells and can produce a swifter response if the
      body encounters that particular antigen again.
   C. Some of the B cells secrete chemicals called pyrogens that travel to the brain inducing a
      fever.
   D. Choices a and b
   E. Choices a, b, and c

52. omit

53. When a person is tested for HIV, if _______ to the HIV are present the test is called
    positive.
   A. bacteria
   B. antigens
   C. antibodies
   D. T-cells
   E. natural killer cells

529
54. Select the **incorrect** statement regarding the complement system in vertebrates.

   A. The complement system is a part of the cellular defenses in the immune system of vertebrates.
   
   B. The complement system consists of approximately 20 different proteins that circulate in the plasma.
   
   C. If these proteins encounter the cell wall of a bacteria or fungi they form aggregations and eventually produce a pore that leads to the destruction of the invading cells.
   
   D. Although these proteins attack invaders, they are not involved with histamine release.
   
   E. The binding of antibodies to invading cells can also trigger aggregations.

55. Select the **incorrect** statement regarding the class of proteins, known as interferons, that play a key role in body defenses.

   A. There are three types of interferons, alpha, beta, and gamma.
   
   B. All cells of the body produce all three types of interferon.
   
   C. The secretion of gamma interferon is an immunological defense against infections and cancer.
   
   D. All interferons are polypeptides.
   
   E. Interferons are messengers that protect normal cells in the areas of infected cells from becoming infected.

56. Select the **incorrect** statement regarding the inflammatory response.

   A. The inflammation response is a localized specific response to infection or injury.
   
   B. If a cell is injured or infected, it releases chemical alarm signals that promote dilation of blood vessels at the injury site.
   
   C. The alarm signals can be histamines or prostaglandins.
   
   D. Tissue can exhibit edema from the dilation of the blood vessels in the area of injury or infection.
   
   E. Neutrophils spill chemical in the area of injury or infection that kills bacteria, tissues, and themselves.

57. Select the **incorrect** statement regarding the temperature response of the immune system.

   A. When macrophages encounter invading cells, they release interleukin-1, which is carried to the brain by the circulatory system.
   
   B. Interleukin-1 is a pyrogen, which can cause the neurons in the hypothalamus to raise the body's temperature, producing a fever.
   
   C. Fever contributes to the body’s defenses by stimulating phagocytosis.
   
   D. Fevers above 105 degrees F can be fatal.
   
   E. Fevers cause the liver and spleen to store sodium and potassium which bacteria need for their growth and metabolism.
58. Select the **incorrectly** matched cell type and its function.
   A. helper T cell—commander of the immune system
   B. inducer T cell—mediates the maturation of other T cells in the thyroid gland
   C. cytotoxic T cell—detects and destroys infected body cells
   D. suppressor T cells—dampens the activities of T cells and B cells after the infection has been arrested
   E. monocyte—precursor of macrophage

59. A friend tells you the following story. “My aunt just received a heart transplant. Her doctors warned us that her body might reject the tissue. I just can’t understand how that could happen, humans hearts are made of the same tissues, aren’t they?” Your correct response should be
   A. “Yes, all human hearts are made of cardiac muscles.”
   B. “Yes, all human hearts are made of cardiac muscles, except some humans have different tissues inside their hearts and this could lead to a tissue rejection by the recipient.”
   C. “Yes, all human hearts are made of cardiac muscles. As far as the rejection of tissues goes, your aunt might have different antibodies than did the donor, which could lead to a rejection.”
   D. “Yes, all human hearts are made of cardiac muscles. However, your aunt might have been given some type of drug during the transplant operation that might cause tissue rejection. You can never be too careful in a hospital, you know.”
   E. “Yes, all human hearts are made of cardiac muscles. As far as the rejection issue, everyone has different MHC proteins on their tissues. Your aunt’s immune system recognizes the ‘self’ tissues but can cause tissue rejection because of the ‘nonself’ tissue in her body having different MHC proteins.”
### Answer Key

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