

1. Eosinophils are involved in the immune response against:
 - A) viruses
 - B) intracellular bacteria
 - C) multicellular parasites
 - D) extracellular bacteria

2. Which of the following are considered to be an acute phase protein?
 - A) serum amyloid A
 - B) streptolysin O
 - C) cardiolipin
 - D) reagin

3. A patient is tested for the presence of C-reactive protein and is found to have an elevated level. What does this indicate is taking place in the patient?
 - A) inflammation
 - B) nothing, the patient is normal
 - C) impossible to determine anything

4. Which of the following are directly used in oxidative killing of target cells?
 - A) hydrogen peroxide
 - B) lysozyme
 - C) defensin
 - D) TNF-alpha

5. A protein that only changes in concentration significantly in response to inflammation and is not detectable when there is no inflammation is called a/an:
 - A) reagin
 - B) immunoglobulin
 - C) complement protein
 - D) acute phase protein

6. Which of the following can be measured as an indicator of inflammation?
 - A) temperature
 - B) number of WBCs
 - C) erythrocyte sedimentation rate
 - D) two of these
 - E) all of these

7. Which of the following are components of innate (natural) immunity?
- A) immunoglobulin
 - B) T helper cells
 - C) macrophages
 - D) B cells
8. Neutrophils and macrophages use all of the following to kill bacteria EXCEPT:
- A) H_2O_2
 - B) perforin
 - C) hydroxyl radical
 - D) lysozyme
 - E) superoxide anion
9. Which is a characteristic of circulating neutrophils (PMN)?
- A) lyse cells with perforin
 - B) recognize antigen with an antigen-specific receptor
 - C) have surface receptors for Fc of IgG
 - D) have surface receptors for C5a
10. What is the name of the process by which phagocytic cells are attracted toward a substance such as complement fragment C3a?
- A) diapedesis
 - B) degranulation
 - C) chemotaxis
 - D) opsonization
11. The function(s) of macrophages/monocytes in the host immune response is (are):
- A) antigen presentation
 - B) phagocytosis
 - C) secretion of cytokines
 - D) all of these
12. Acute phase reactants have been determined to be elevated in a patient. What does this result on its own indicate about the patient?
- A) Inflammation of unknown cause is present.
 - B) Patient has a leukemia but not a lymphoma.
 - C) This is a normal result.
 - D) There is a parasitic infection and not a viral infection.

13. The phagosome of a macrophage is a membrane-bound vesicle that contains:
- A) enzymes
 - B) reactive oxygen intermediates
 - C) ingested bacteria
 - D) perforin and granzymes
14. Oxidative killing involves which of the following?
- A) perforin and granzymes
 - B) activation of complement
 - C) direct cytokine-mediated killing
 - D) formation of reactive oxygen intermediates
15. Macrophages recognize target cells using which of the following?
- A) MHC class II
 - B) mannose receptors
 - C) T-cell receptor
 - D) killer cell inhibitory receptors
16. Diapedesis is:
- A) movement of cells in response to increasing concentration of a cytokine
 - B) attachment of immunoglobulin to target cells
 - C) cells squeezing through endothelial cells to leave the circulation
 - D) engulfment of target cells
17. The function(s) of macrophages/monocytes in the host immune response is (are):
- A) antigen presentation
 - B) phagocytosis
 - C) secretion of cytokines
 - D) all of these
18. The respiratory burst is:
- A) an increase in oxygen consumption
 - B) pseudopodia extending around a particle
 - C) the release of granules from a cell
 - D) the sudden exhale of a cell

19. Which of the following is part of the external defense system?
- A) ceruloplasmin
 - B) skin
 - C) neutrophils
 - D) complement
20. Which is characteristic of natural immunity?
- A) Memory is involved.
 - B) Lymphocytes play a major role.
 - C) It is very specific.
 - D) It depends on normally present body functions.
21. What is the major function of C-reactive protein (CRP)?
- A) acts as an opsonin
 - B) binds hemoglobin
 - C) causes vasodilation
 - D) helps to form clots
22. All of the following are considered part of natural immunity EXCEPT:
- A) eosinophils
 - B) lymphocytes
 - C) acute phase reactants
 - D) neutrophils
23. Where does the immune response to foreign antigen in the tissue mainly occur?
- A) lymph nodes
 - B) blood
 - C) bone marrow
 - D) skin
24. Which white cell in the peripheral blood migrates to the tissue to become a macrophage?
- A) eosinophil
 - B) basophil
 - C) neutrophil
 - D) monocyte

25. Which of the following acute phase reactants is an important clotting factor?
- A) haptoglobin
 - B) ceruloplasmin
 - C) fibrinogen
 - D) alpha-2 macroglobulin
26. Which substance best inactivates bacterial proteins?
- A) NADP
 - B) oxygen
 - C) OCl^-
 - D) lactic acid
27. A white blood cell that is 16 to 18 μm in diameter, has a horseshoe-shaped nucleus, and is capable of further differentiation in the tissues best describes:
- A) neutrophil
 - B) eosinophil
 - C) basophil
 - D) monocyte
28. Jenner's discovery that cowpox generated immunity against smallpox is based on the principle of:
- A) attenuation of a harmful substance
 - B) natural immunity
 - C) passive immunity
 - D) cross-immunity
29. All of the following are characteristic of acute phase reactants EXCEPT:
- A) increase rapidly in response to infection
 - B) used to diagnose a specific disease
 - C) enhance phagocytosis
 - D) promote inflammation
30. What is the function of the acute phase protein haptoglobin?
- A) acts as an opsonin
 - B) forms clots
 - C) binds hemoglobin
 - D) acts as a chemotaxin

31. Measurement of CRP levels could be used for which of the following?
- A) to determine risk of a heart attack
 - B) to determine flare-up of rheumatoid arthritis
 - C) to detect an inflammatory process
 - D) all of the above
32. Acquired (adaptive) immunity can be characterized by which of the following?
- A) nonspecific
 - B) immediate response
 - C) depends on neutrophils and macrophages
 - D) involves memory
33. Neutrophils are characterized by all of the following EXCEPT:
- A) found in the marginating pool in blood vessels
 - B) capable of diapedesis
 - C) granules stain bright orange with Wright stain
 - D) segmented nucleus
34. All of the following occur during the process of inflammation EXCEPT:
- A) increased capillary permeability
 - B) migration of basophils to tissue
 - C) increase in blood flow
 - D) swelling and pain
35. Which of the following best explains the reaction that takes place in the latex agglutination slide test for CRP?
- A) Latex particles are coated with anti-CRP.
 - B) Latex particles are coated with CRP.
 - C) Latex particles are nonspecifically bound.
 - D) CRP is acting as an antibody.
36. Which of the following is true of NK cells?
- A) They produce antibody.
 - B) They are capable of phagocytosis.
 - C) They have markers CD4 and CD16.
 - D) They kill tumor and virally infected cells.

37. Which of the following is NOT characteristic of acquired immunity?
- A) Memory is involved.
 - B) Lymphocytes play a major role.
 - C) It is very specific.
 - D) It depends on normally present body functions.
38. All of the following are characteristic of a lymph node EXCEPT:
- A) filters drainage 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
39. Which of the following represents the best explanation for the action of natural killer (NK) cells?
- A) They recognize specific antigen.
 - B) They kill if MHC class I is present.
 - C) They kill by releasing perforins.
 - D) They participate in phagocytosis.
40. All of the following are considered part of natural immunity EXCEPT:
- A) eosinophils
 - B) lymphocytes
 - C) acute phase reactants
 - D) neutrophils
41. Macrophages that migrate to the liver are called:
- A) alveolar macrophages
 - B) histiocytes
 - C) microglial cells
 - D) Kupffer cells
42. Acquired immunity can be characterized by which of the following?
- A) nonspecific
 - B) immediate response
 - C) depends on neutrophils and macrophages
 - D) involves memory

43. The ability to resist infection through normally present body functions best characterizes:
- A) autoimmunity
 - B) natural immunity
 - C) acquired immunity
 - D) alloimmunity
44. A white blood cell described as between 12 to 22 μm with a large horseshoe-shaped nucleus that further differentiates in the tissue to become a macrophage best describes:
- A) neutrophil
 - B) lymphocyte
 - C) basophil
 - D) monocyte
45. Which of the following is considered part of the internal defense system?
- A) cilia
 - B) mucous membranes
 - C) neutrophils
 - D) acidity of the skin
46. All of the following are part of the process of phagocytosis EXCEPT:
- A) formation of a phagosome
 - B) creation of hypochlorite radicals
 - C) formation of fibrin clots
 - D) outflowing of cell cytoplasm
47. All of the following are examples of natural immunity EXCEPT:
- A) skin as a structural barrier
 - B) acute phase reactants
 - C) phagocytosis
 - D) antibodies
48. If a slide test for CRP is positive, what does this indicate?
- A) It is a nonspecific indicator of inflammation.
 - B) Patient has lupus.
 - C) Patient is immunocompromised.
 - D) Patient has a strep infection.

49. All of the following are considered acute phase reactants EXCEPT:
- A) fibrinogen
 - B) complement
 - C) C-reactive protein
 - D) TNF-alpha

Answer Key

1. C
2. A
3. A
4. B
5. D
6. E
7. C
8. B
9. C
10. C
11. D
12. A
13. C
14. D
15. B
16. C
17. D
18. A
19. B
20. D
21. A
22. B
23. A
24. D
25. C
26. C
27. D
28. D
29. B
30. C
31. D
32. D
33. C
34. B
35. A
36. D
37. D
38. D
39. C
40. B
41. D
42. D
43. B
44. D

- 45. C
- 46. C
- 47. D
- 48. A
- 49. D