

Q1. What is the role of humoral immunity in the immune response?

ANS: It neutralizes and eliminates extracellular microbes by producing antibodies by B-lymphocytes.

Q2. How does cell-mediated immunity differ from humoral immunity?

ANS: Cell-mediated immunity targets intracellular microbes, while humoral immunity targets extracellular pathogens.

Q3. Which of the following best describes the concept of immune memory?

ANS: It involves the immune system remembering past encounters with antigens and responding more effectively upon re-exposure.

Q4. What is the primary function of T-lymphocytes in cell-mediated immunity?

ANS: They destroy infected cells and activate other immune cells like phagocytes.

Q5. What is the main purpose of the clonal selection hypothesis?

ANS: To illustrate how lymphocytes with specific antigen receptors are activated and proliferate in response to antigen exposure.

Q6. Which of the following describes the main function of opsonin?

ANS: They prevent pathogens from entering the body through mucous membranes.

Q7. What is the primary role of C-reactive protein (CRP) during an immune response?

ANS: It opsonizes pathogens and activates complement.

Q8. What happens during inflammation as part of the body's internal defense?

ANS: The affected area is isolated, and immune cells are recruited to eliminate pathogens.

Q9. Which of the following is a key feature of the complement system?

ANS: It directly lyses bacterial cells and attracts phagocytes to infection sites.

Q10. Which of the following external defense mechanisms prevents bacterial growth by lowering the pH of certain body areas?

ANS: Acidic secretions in the stomach, vagina, and skin

Q11. How do natural killer (NK) cells differ from B and T lymphocytes?

ANS: NK cells kill infected cells without using antigen-specific receptors.

Q12. What role do dendritic cells play in acquired immunity?

ANS: They present antigens to T-lymphocytes to initiate the immune response.

Q13. Which of the following is NOT considered a part of the innate immune response?

ANS: Activation of B-lymphocytes

Q14. Which organ is responsible for trapping and concentrating blood-borne antigens for the immune system to respond?

ANS: Spleen

Q15. What happens to a lymphocyte when it encounters a specific antigen in a lymph node?

ANS: It gets activated, proliferates, and differentiates

Q16. What is the significance of the Bursa of Fabricius in the study of immunology?

ANS: It is the organ responsible for B cell production in birds

Q17. The term "MALT" refers to:

ANS: A group of lymphoid tissues associated with mucosal surfaces

Q18. What process ensures that self-reactive T cells are eliminated during development?

ANS: Negative selection in the thymus

Q19. What is the significance of the "double negative" stage in

T cell maturation?

ANS: T cells do not express CD4 or CD8 molecules during this stage

Q20. Which of the following is true about monoclonal antibodies?

ANS: Each monoclonal antibody is specific to one epitope on an antigen

Q21. Which of the following describes the process of affinity maturation in B cells?

ANS: B cells undergo genetic changes to improve their antibody affinity for a specific antigen

Q22. What is the purpose of using fluorescence in flow cytometry?

ANS: To differentiate cell types based on specific markers

Q23. What is hybridization in the context of nucleic acid probes?

ANS: Binding of two complementary strands of DNA or RNA

Q24. Which application of flow cytometry is particularly useful in immunology?

ANS: Monitoring immune cell populations in HIV patients

Q25. In flow cytometry, why is sheath fluid used?

ANS: To focus cells into a single-file stream

Q26. Which CD marker is primarily used to identify B cells in peripheral blood?

ANS: CD19

Q27. In HLA inheritance, what term is used for a collection of alleles present on a single chromosome?

ANS: Haplotype

Q28. What information is derived from identifying a child's HLA haplotypes in paternity testing using HLA typing?

ANS: Likelihood of paternity based on haplotype inheritance

Q29. What is the primary function of CD45 in leukocytes?

ANS: It serves as a general leukocyte marker

Q30. Which HLA class antigens are typically detected using

DNA probes?

ANS: Class II HLA antigens only

Q31. In the microcytotoxicity assay, what happens if an antibody matches an HLA antigen on a lymphocyte?

ANS: The cell undergoes lysis

Q32. Which cell type is identified by the CD16 and CD56 markers in flow cytometry?

ANS: Natural killer (NK) cells

Q33. Which of the following traits is essential for a substance to act as an immunogen?

ANS: Having foreignness to the host

Q34. Haptens are nonimmunogenic by themselves. Under what conditions can they elicit an immune response?

ANS: When complexed with a large carrier molecule

Q35. What distinguishes MHC Class II molecules from Class I molecules in terms of cellular expression?

ANS: MHC Class II molecules are expressed only on antigen-presenting cells (APCs).

Q36. Which of the following is true about synthetic polymers used in biomedical applications?

ANS: They are nonimmunogenic and useful for artificial heart valves.

Q37. Which factor directly contributes to the diversity of the MHC gene complex?

ANS: Haplotype inheritance of MHC regions

Q38. What role do adjuvants play in immunology?

ANS: Enhancing immune response when administered with immunogens

Q39. What type of antigen is involved in autoimmune diseases when the immune system treats self-antigens as foreign?

ANS: Autoantigens

Q40. Which of the following conditions describes an individual with two different alleles at the same HLA locus?

ANS: Heterozygous

Q41. What is the main role of calnexin in MHC Class I molecule assembly?

ANS: Stabilizing the MHC Class I heavy chain before β 2-microglobulin binding

Q42. What is the role of chemokines in the immune response?

ANS: Regulate leukocyte migration to sites of inflammation

Q43. Which cells are activated by IL-2 to enhance their cytotoxicity?

ANS: NK cells

Q44. What is the outcome when cytokines such as TNF- α are produced excessively?

ANS: Intravascular thrombosis and shock

Q45. Which of the following is an example of a polyclonal activator?

ANS: Lipopolysaccharide (LPS)

Q46. Which type of cell interaction is mediated by adhesion molecules such as ICAM-1 and LFA-1?

ANS: T cell binding to antigen-presenting cells

Q47. Which of the following is a key characteristic of the secondary immune response?

ANS: Short lag phase with rapid IgG production

Q48. What is the primary effect of a superantigen on the immune system?

ANS: Activation of a large percentage of T cells

Q49. Which type of antigen presentation is necessary for CD8 T cell activation?

ANS: Endogenous antigens with MHC Class I

Q50. Which molecule is a key adhesion molecule facilitating T cell and antigen-presenting cell (APC) binding?

ANS: LFA-1