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Immunobiology Bio 3312/5310
Exam 1 - Fall 2003

Name _____

For each question select the Correct answer

1. Class II MHC from a macrophage which has not phagocytosed foreign antigen will not be expressed on the plasma membrane.
A) True
 B) False

2. The endocytic processing pathway is performed only by macrophages.
A) True
 B) False

3. Stromal cells aid in the differentiation of what type of cells?
A) Plasma cells.
B) T cells.
C) B cells.
D) NK-cells.
 E) Bone-marrow cells.

4. Lymphatic capillaries collect?
 A) Lymph.
B) Blood.
C) Spinal fluid.
D) T cells.
E) B cells.

5. An inflammatory response
- A) is characterized by a decrease in vascular permeability
 - B) is stimulated by cytokines produced by neutrophils.
 - C) occurs only during a secondary response
 - D) recruits phagocytes to the infection site.
 - E) usually lasts for many weeks to ensure antigen is completely removed.

6. Several friends who went on a picnic together developed vomiting and diarrhea from eating potato salad contaminated with Staphylococcus aureus enterotoxin. Effects of the toxin could best be counteracted by

- A) antibody binding and neutralization of the toxin.
- B) antibody opsonization and phagocytosis of S. aureus.
- C) antibody opsonization and phagocytosis of the toxin.
- D) B cell binding to S. aureus.
- E) cytotoxic T cell binding and lysis of S. aureus.

Match the following with the questions below:

- A) Mouse IgE
- B) Human IgG
- C) Human alpha chain
- D) Human naive B cells
- E) Mouse gamma chain

- 7. Rabbit anti-mouse IgG Fc will bind E
- 8. Mouse anti-human mu chain will bind D
- 9. Goat anti-human gamma chain will bind - B
- 10. Mouse anti-human IgA will bind C
- 11. Rabbit anti-mouse epsilon chain will bind A

12. Myeloma cells are
- A) cancerous plasma cells that require antigen activation to induce division.
 - B) cell lines that secrete specific antibodies for a short time, then die.
 - C) derived from a very harmful skin cancer quite common in sunny regions.
 - D) plasma cells that secrete abnormal antibodies in high amounts.
 - E) propagated from spontaneously arising plasma cell cancers.

13. Isotype switching

- A) changes the leader sequence exon so the antibody is secreted.
- B) improves the antigen binding specificity of an Ig molecule.
- C) increases the affinity of antibodies in a process called affinity maturation.
- D) increases the functional diversity of Ig molecules.
- E) occurs randomly between switch regions.

14. Allergens such as ragweed induce the production of which class of antibodies?

- A) IgA.
- B) IgE.
- C) IgG.
- D) IgM.
- E) IgF.

15. Peptides presented by MHC Class I must be 8-10 amino acids long.

- A) True
- B) False

16. The only cell that can repopulate the entire hematopoietic system is the

- A) large granular lymphocyte.
- B) lymphoid progenitor.
- C) M cell.
- D) myeloid progenitor.
- E) pluripotent stem cell.

17. All Igs have a flexible hinge region.

- ~~A) True~~
- B) False

18. People with type A blood have "natural" anti-B antibody in their serum, made to polysaccharide antigens on intestinal bacteria that share epitopes with type B RBC. To detect anti-B in serum, you could NOT use
- A) agglutination.
 - B) complement lysis.
 - C) ELISA.
 - D) precipitation.
 - E) RIA
19. A CD marker unique to B cells?
- A) CD3.
 - B) CD56.
 - C) CD32.
 - D) CD28.
 - E) CD4.
20. The major histocompatibility complex (MHC) encodes
- A) all the minor histocompatibility genes.
 - B) dozens of copies of MHC Class I and Class II genes.
 - C) foreign antigens that stimulate autoimmune disease.
 - D) self proteins that are required for positive selection.
 - E) the and 2 microglobulin chains of MHC Class I.
21. Your patient, suffering from a bacterial infection, receives a penicillin injection and almost immediately experiences respiratory distress and loses consciousness. This reaction is MOST LIKELY mediated by
- A) complement.
 - B) CD8+ cytolytic T cells.
 - C) macrophages.
 - D) mast cells.
 - E) natural killer cells.
22. NK cells are the innate immune effectors that eliminate endogenous antigens.
- A) True
 - ~~B) False~~

23. An example of humanized antibodies are?
- A) Antibodies with V_H & V_L chains of human origin and C_H and C_L of mouse origin.
 - B) Antibodies with V_H & V_L chains of mouse origin and C_H and C_L of human origin.
 - C) Antibodies with D_H & D_L chains of mouse origin and D_H and D_L of human origin.
 - D) Antibodies with D_H & D_L chains of human origin and D_H and D_L of mouse origin.
 - E) None of the above is correct.
24. The thyroid is part of the MALT.
- A) True
 - B) False
25. Endogenous peptides are processed in the endosomal processing pathway.
- A) True
 - B) False
26. Which of the following is not a component of Innate Immunity?
- A) Skin
 - B) Antibodies.
 - C) Temperature.
 - D) Low pH.
 - E) Inflammation.
27. Forces that hold the antigen in the antigen-combining pocket of the antibody molecule include all of the following EXCEPT:
- A) covalent bonds
 - B) hydrogen bonds
 - C) ionic bonds
 - D) hydrophobic interactions
 - E) Van der Waals interactions
28. The antigen-combining site of an antibody molecule determines its allotype.
- A) True
 - B) False

29. Human MHC Class II proteins are called HLA DP, HLA DQ, and HLA DR.

- A) True
- B) False

30. Kupffer cells are?

- A) Macrophages found in the brain.
- B) Macrophages found in the liver.
- C) Macrophages found in the kidney.
- D) Macrophages found in the bone.
- E) Macrophages found in the lung.

31. Which gene product prevents apoptosis?

- A) bcl-2.
- B) bax.
- C) caspase.
- D) fax.
- E) fas.

32. MHC Class I molecules are _____ and MHC class II molecules are _____.

- A) heterodimers, monomers.
- B) dimers, monomers.
- C) monomers, dimers.
- D) monomers, heterodimers.
- E) heterozygous, homozygous.

33. The inflammatory response includes 4 stages. Which one is NOT one of these stages?

- A) Necrosis.
- B) Redness.
- C) Pain.
- D) Heat.
- E) Swelling.

34. ELISA and RIA are very similar in performance and sensitivity; only the detection system is different.

A) True

B) False

35. Processing of antigen by M cells leads to the production of?

A) IgM antibodies.

B) IgG antibodies.

C) IgA antibodies.

D) IgE antibodies.

E) None of the above is correct.

36. The secondary lymphoid organ which acts as a filter across the gut mucosa is the

A) appendix.

B) cervical lymph node(s).

C) Peyer's patch(es).

D) spleen.

E) thymus.

37. An individual's active immunity depends on their own exposure to antigens.

A) True

B) False

38. The most numerous leukocytes are?

A) Lymphocytes.

B) Monocytes.

C) Eosinophils.

D) Basophils.

E) Neutrophils.

39. Secreted antibodies bind non-covalently to the specific antigen that induces them. Which one of the following activities is MOST LIKELY to be a consequence of an antibody interaction with a particulate antigen?
- A) Activation of the antigen
 - B) Lysis of the antigen
 - C) Opsonization of the antigen
 - D) Production of IL-2
 - E) Synthesis of granzymes
40. The immunoglobulin isotype is determined by the
- A) antigen specificity
 - B) H chain constant region
 - C) H chain variable region.
 - D) L chain constant region.
 - E) L chain variable region.
41. Identical twins share all their MHC Class I and Class II alleles.
- A) True
 - B) False
42. Allotypic determinants
- A) are co-dominantly expressed by a single B lymphocyte.
 - B) are found on light chains only.
 - C) are non-polymorphic amino acid sequences.
 - D) exhibit "affinity maturation."
 - E) reflect the mother's allotype in cord blood samples
43. Macrophages are an example of phagocytic cells.
- A) True
 - B) False

44. A molecule that is an antigen but is not an immunogen is called a(n)
A) adjuvant.
B) carrier.
C) haptan.
D) mitogen.
E) superantigen.
45. Dendritic cells are derived from
A) Lymphoid progenitor cells.
B) Myeloid progenitor cells.
C) Both lymphoid and myeloid progenitor cells.
D) Neither lymphoid and myeloid progenitor cells.
E) Plasma cells.
46. A substance which, when mixed with antigen, will increase its immunogenicity, is called an adjuvant.
A) True
B) False
47. An assay which uses enzyme-linked antibody to detect antigen which has been separated by gel electrophoresis is
A) ELISA
B) immunoelectrophoresis.
C) Northern blot.
D) Ouchterlony
E) Western blot.
48. Antigen recognition by T cells
A) can only occur for assembled epitopes.
B) first requires antigen to be processed.
C) involves antigen presentation on APC membrane antibody.
D) is equally efficient for polysaccharides, lipids, and protein antigens.
E) is not required for humoral immunity.

49. The immunoglobulin domain structure is unique to antibody molecules.

A) True

B) False

50. The antigen specificity of an adaptive immune response is due to

A) activation of antigen-specific lymphocytes.

B) folding of antibody to fit the pathogen.

C) lysis of only certain pathogens by complement.

D) phagocytosis of only certain pathogens by macrophages.

E) production of antigen-specific cytokines.