生技系 免疫學期中考(I)考古題

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Terminology

1. Regulators of complement activation
2. Secondary lymphoid tissues
3. Phagosome
4. MAC
5. Cytokines
6. NK cell
7. Type I interferon
8. Fab
9. Ag-presenting cells
10. Acute-phase proteins

Single choice: Please choose the one that is most relevant to the described terminology below.

1. Which of the following molecules do not participate in the MHC-class I pathway? (A) TAPs (B) ERp57 (C) calnexin (D) invariant chain.
2. Which of the following cells belongs to the myeloid lineage? (A) T cell (B) B cell (C) Neutrophil (D) NK cell.
3. Which of the following activities are most closely associated with Neutrophils? (A) Ab production (B) phagocytosis of bacteria (C) lysis of virus-infected cells (D) Type-I interferon production.
4. $CD8^+$ T cells (A) MHC-class III (B) T helper cells (C) MHC-class I (D) MHC-class II.
5. Professional Ag-presenting cells (A) Neutrophils (B) Dendritic cell (C) T cell (D) NK cell.
6. Innate immune response to virus infection (A) T cell (B) B cell (C) Neutrophil (D) NK cell.
7. The lectin pathway of complement activation (A) C1r (B) C1s (C) factor D (D) MASP-2.
8. Primary lymphoid organ (A) liver (B) peyer's patches (C) thymus (D) spleen.
9. Reactive nitrogen intermediates (A) H_2O_2 (B) $OH^{\cdot}$ (C) NO_2 (D) ClO^-.
10. Which of the following molecules belongs to opsonins? (A) iC3b (B) factor B (C) C3a (D) C1q.

Essays:

1. Please show schematically (draw) the basic structure of (1) Immunoglobulin and (2) T cell receptor.
2. Describe the MHC-class II pathway and discuss its importance.
3. Please list at least 2 different Pattern Recognition Receptors and the microbial ligands they recognize
4. Please describe at least 2 different ways that our innate immune system used to kill bacteria.
5. Please list at least 2 pro-inflammatory cytokines and describe briefly their functions?
6. Please describe the nature and the function of Neutrophil Extracellular Traps (NETs).

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True (O) / False (X)

1. Disulfide bounds are involved in the reaction between Ab and Ag.
2. IgA in milk is one form of passive immunization.
3. The adaptive immune response to a pathogen can sometimes trigger hypersensitive reactions that eventually cause disease.
4. The MHC class I pathway presents antigens to cytotoxic $CD8^+$ T cells.
5. The initiation reaction of adaptive immunity is faster than that of the innate immunity.
6. Mature B cells can produce and secrete large amount of antibodies.
7. Both T and B cells are specific for the same or different parts of the same antigen.
8. IgE-producing B cells can switch to IgM-producing B cells with proper cytokine stimulation.
9. The expression of MHC class I can be detected on neutrophils.
10. Junctional diversity during Ig gene rearrangement results from the addition of switch region nucleotides.

Single Choice

1.Which of the following statement regarding immunoglobulins is correct?
(A) Each Fab has 1 antigen binding sites.
(B) Regardless of their isotype, immunoglobulins all have the same effector function.
(C) There is couple of covalent bonds between two light chains.
(D) The constant regions make up the antigen-bind sites.

2.Which statement is **NOT** correct for MHC molecules or genes?
(A) Many haplotypes can be detected in a population.
(B) The MHC class II molecules are expressed on dendritic cells.
(C) The MHC class II pathway presents antigen derived from intracellular infectious pathogens.
(D) The MHC class II pathway presents antigen to helper $CD4^+$ T cells.

3.Which of the following statements is **NOT** correct in activation- induced cytidine deaminase $(AID)^{-/-}$ mice?
(A) less IgA response against the target Ag
(B) less IgG response against the target Ag
(C) less IgM response against the target Ag
(D) no somatic hypermutation

4.Which of the following immunoglobulin usually forms pentamer?
(A) IgA (B) IgE (C) IgG (D) IgM

5.Which of the following is paired correctly?
(A) IgA: highest levels in serum
(B) IgE: highest levels in mucosal tissues
(C) IgG: highest levels in body fluid
(D) IgM: can cross placenta and protect fetus

6.Which of the following statement is correct with reference to immunoglobulin structures?
(A) The antibody secreted by a plasma cell has a different specificity for antigen than the immunoglobulin expressed by its B-cell precursor.

(B) The amino-terminal regions of heavy and light chains of different immunoglobulins all differ in amino acid sequence.

(C) A flexible hinge region holds the heavy chain and light chain together.

(D) λ and κ light chains have different function.

7.The process by which a pathogen stimulates only those lymphocytes with receptors specific for that pathogen is called

(A) somatic recombination (B) clonal selection (C) antigen processing (D) antigen presentation

8.Which of the following mechanisms is **NOT** the major source of sequence variation of CDR3?

(A) Class switch (B) N-nucleotide addition (C) P-nucleotide addition (D) Junctional flexibility

9.Followings are antibody-mediated effector functions, **EXCEPT**

(A) Kill virus-infected cells (B) Promote opsonization (C) Activate complement (D) Transcytosis

10.Please indicate the order of serum IgG1、IgG2、IgG3、IgG4 concentration. (參考 103 年醫檢師國考)

(A) IgG1＞IgG2＞IgG3＞IgG4 (B) IgG3＞IgG2＞IgG1＞IgG4 (C) IgG2＞IgG3＞IgG4＞IgG1 (D) IgG4＞IgG3＞IgG2＞IgG1

Define the following terms：

1. allelic exclusion
2. plasma cells
3. Humanized antibody

Short assays:

1. What would be the effect of a genetic defect that resulted in a lack of somatic recombination between V, D, and J segments?
2. Describe the positive and negative thymus selection during T cell development.
3. Explain the mechanism of palindromic nucleotide addition during Ig gene recombination.