

## 生技系 免疫學期中考(II)考古題

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### True (○) / False (X)

1. In order to develop into immature B cells, pro-B cells must interact directly with bone-marrow stromal cells.
2. FcεRII (CD23) has very high affinity to IgE.
3. Different types of B-cell tumor reflect B cells at different stages of development.
4. Dimeric IgA is predominately detected in the blood.
5. In the first year of life, infants have a transient decrease in levels of IgG.
6. An immunodeficiency called hyper IgM syndrome is characterized by the lack of CD40 expression on B cells.
7. The allergens are presented and activate T cells differently from regular antigens.
8. IFN-γ is an important mediator for type IV hypersensitivity.
9. The development of mature B cells happens in bone marrow requires the stimulation of antigens.
10. Th1 cells release cytokines that result in an increased production of eosinophils and mast cells in the bone marrow.

### Single Choice

1. Which cells are rapidly dividing B cells located in the dark zone of germinal centers?  
(A) centroblasts (B) centrocytes (C) plasmablasts (D) plasma cells
2. Which of the following molecular can **NOT** be detected on the surface of pre-B cells?  
(A) IL-7Rα (B) κ or λ chain (C) μ chain (D) surrogate light chain
3. Which of the following is a characteristic of follicular dendritic cells in the primary follicles of secondary lymphoid tissues?  
(A) They provide a stable depository of intact antigens able to bind to B-cell receptors.  
(B) They internalize immune complexes through CR2 receptor cross-linking.  
(C) They bear bundles of immune complexes called iccosomes that are passed on to antigen-specific B cells.  
(D) They produce cytokines that induce B cells to proliferate and become centroblasts.
4. Which of the following is thymus-independent (TI) type 1 antigen?  
(A) dextran (B) LPS (C) poly-D amino acids (D) ovalbumin
5. Which of the following statement is **NOT** proper for B-1 cells?  
(A) do not require T-cell help (B) firstly produced in the liver of fetus (C) secrete more IgG than IgM  
(D) usually express CD5 as its marker
6. Which of the following statements regarding negative selection of B cells is correct?  
(A) Negative selection is a process that occurs in the bone marrow but not in secondary lymphoid organs.  
(B) Negative selection ensures that B cells bearing receptors for pathogens that will not be encountered in a person's lifetime are eliminated to make room for B cells bearing useful receptors.  
(C) Negative selection eliminates B cells at the end of an infection as a means of terminating an immune response once the pathogen has been removed from the body.  
(D) Negative selection ensures that autoreactive B cells are prohibited from emerging in the body.

7. Which of the following is **NOT** the risk factor for asthma?
- (A) have a SNP (single nucleotide polymorphism) linked to IRF (interferon regulatory factor) gene  
 (B) be the first child in a family  
 (C) be infected with intracellular bacteria  
 (D) lives in a germ-free environment
8. Which of the following statement is **NOT** correct for the surface B-cell co-receptor?
- (A) is composed with CD19, CD21, and CD81  
 (B) the cooperation between B-cell receptor and co-receptor increases the sensitivity to antigen  
 (C) the cytoplasmic tail of CD21 is phosphorylated by the tyrosine kinases associated with the B-cell receptor  
 (D) CD21 is also the receptor of iC3b and C3d
9. Indicate the **FALSE** statement related to the B cell responses:
- (A) Cytokine can determine which isotype of antibody is produced.  
 (B) Fc and C' receptors on phagocytes trigger the uptake and degradation of Ag-coated bacteria.  
 (C) The binding of Abs to Fc receptors always trigger activation of other leukocytes.  
 (D) Ab-coated target cells can be killed by NK cells in Ab-dependent cell-mediated cytotoxicity (ADCC).
10. Which of the following approach can **NOT** be considered as the potential treatment for asthma?
- (A) blockade of IgE receptor (B) corticosteroids (C) inhibit IL-12 (D) lipoxygenase inhibitors
11. X-linked agammaglobulinemia syndrome might be caused with the deficiency of
- (A) Activation-induced cytidine deaminase (AID) (B) Bruton's tyrosine kinase (Btk)  
 (C) CD40 ligand (CD40L) (D) Recombination-activating gene (RAG)
12. Mary, a 50 years old woman, has been diagnosed with was rheumatoid arthritis. She suffers swollen joints and the titer of her serum rheumatoid factor is high. Rheumatoid factor is
- (A) anti-C3 antibody (B) anti-allergen antibody (C) anti-DNA antibody (D) anti-IgG antibody

**Short assays:**

- Indicate which type of hypersensitive reactions (I-IV) contribute to the following clinical manifestations.
 

a. ___ Allergic rhinitis	b. ___ Arthus reaction
c. ___ HDNB (haemolytic disease of the newborn)	d. ___ Serum sickness
e. ___ Systemic anaphylaxis	f. ___ Tuberculin reaction
- Describe how immunoglobulin expressed during a primary immune response differs qualitatively and quantitatively from the immunoglobulin expressed during a secondary immune response.
- Give the isotype of the antibodies involved in (A) placental transfer and (B) transfer into breast milk, and explain why these antibodies are important.
- Explain how the immune complexes are removed from the circulation.
- Describe 2 ways in which the immunoglobulins acting as antigen receptors on the surface of a mast cell differ from the immunoglobulins acting as the antigen receptors on the surface of a B cell.
- Give 2 ways in which a susceptible person can help to minimize the risk of having an allergic reaction.

**True or false**

1. In healthy individuals the immune system is tolerant of self antigens.
2. TCR gene rearrangement starts in double-negative thymocytes.
3. T cells specific for self MHC molecules are removed in the thymus.
4. MHC class II molecules present antigens to CD8 T cells.

**Single choice**

1. Which of the following is a characteristic of adaptive immunity? (A) immune memory (B) begins at early stage of infection (C) without antigen specificity (D) phagocytosis of foreign pathogens
2. Which of the following transcriptional factor is specific for Treg cells (A) FoxP3 (B) GATA3 (C) T-bet (D) ROR $\gamma$ t
3. Serum level of IFN  $\gamma$  is elevated in a patient. What would you predict to happen in the individual (A) T cell development is enhanced (B) Activation of Th1 response (C) Activation of Th2 response (D) Immune response is suppressed by Treg response
4. T-cell receptor diversity is mainly generated by (A) gene rearrangement (B) gene mutation (C) methylation (D) cytokine
5. Which of the following is the co-stimulator molecule involved in activation of naïve T cell (A) CD28 (B) TCR (C) antigen (D) MHC

**Short assays**

1. Please describe the propose and outcome of the positive selection and negative selection in T cells development. (4 points)
2. List the 3 different kinds of antigen-presenting cells. (3 points)