

系級	科目	授課教師	考試日期	學號	姓名
技二	免疫學	陳建木	90年6月19日第 節		

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 ②每張試題卷務必填寫(學號)、(姓名)。③選擇題答案直接寫在選號前 ④姓名務中書寫

**A. DIRECTIONS:** Each of the numbered items or incomplete statements in this section is followed by answers or by completions of the statement. Select the ONE lettered answer or completion that is BEST in each case.

- The strongest evidence for the role of the immune system in preventing the establishment of tumors (immune surveillance) is the
  - hereditary pattern of malignancies
  - Peak incidence of malignancies in the age group 10 to 50 years
  - Rapid transformation of normal cells to malignant cells in vitro, where the immune system is not available
  - Markedly increased incidence of malignancies in people with congenital or acquired immune deficiencies
  - Paucity of tumors in the very young
- A unique tumor-specific antigen (TSA) is found in only a single tumor and is not present in any other tumor, whether of the same or different histologic type. This can best be explained by
  - a virus
  - derepression of a fetal antigen
  - a random mutation
  - immunosuppression in the host
  - faulty immune surveillance in the host
- Immunotherapy for atopy induces formation of which of the following blocking antibodies?
  - IgA
  - IgD
  - IgE
  - IgG
  - IgM
- The pathogenesis of immune complex disorders involves an interplay of antigen, antibody, neutrophils, and which of the following complement-derived factors?
  - C1s
  - C1a4b
  - C3b inactivator
  - C3 activator
  - C5a
- What is the most effective method of treating atopic allergies?
  - Hyposensitization
  - Environmental control
  - Administration of modified allergens
  - Administration of antihistamines
  - Administration of corticosteroids

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		Dr. YH	____年____月____日第____節		

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6. Mediators of immediate hypersensitivity(type I) reactions are either preformed and stored in host cells or are newly formed from precursor constituents. Which one of the following is a preformed mediator of type I reactions ?
  - (A) Platelet-activating factor (PAF)
  - (B) Anaphylatoxin I
  - (C) Slow-reacting substance of anaphylaxis(SRS-A)
  - (D) Serotonin (5-hydroxytryptamine)
  - (E) Myeloperoxidase
7. Tissue injury in cytotoxic (type II) hypersensitivity reactions is initiated by which of the following pathogenic mechanisms ?
  - (A) Antibody interfering with the functioning of biologically active substances
  - (B) Antigen reacting with cell-bound antibody
  - (C) Antibody reacting with cell-bound antigen
  - (D) Formation of antigen-antibody complexed
  - (E) Sensitized T cells reacting with specific antigens
8. The pathogenic requirements for immune complex-induced glomerulonephritis include
  - (A) red blood cell and complement interaction
  - (B) lymphocytes
  - (C) neutrophils
  - (D) kidney-derived antigen
  - (E) large aggregated immune complexes
9. Allergic urticaria is best described as being a manifestation of
  - (A) an IgE-mediated disorder
  - (B) delayed hypersensitivity
  - (C) cytotoxic IgG antibodies
  - (D) cytotoxic T (Tc) cells
  - (E) an immune complex-mediated disorder

**B. DIRECTIONS:** Each of the numbered items or incomplete statements in this section is negatively phrased, as indicated by a capitalized word such as NOT, LEAST, or EXCEPT. Select the ONE lettered answer or completion that is best in each case.

10. All of the following are naturally occurring components of the immune response to malignancies EXCEPT
  - (A) a heightened general immune responsiveness
  - (B) specific cellular immunity via lymphocytes
  - (C) cytotoxic antibodies that destroy tumor cells
  - (D) enhancing antibodies that interfere with the immunologic attack on tumor cells
  - (E) modulation of tumor antigenicity
11. All of the following statements about immunologic factors favoring tumor growth are true EXCEPT

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- (A) such factors may act by binding to tumor cells and protecting the cells from cytotoxic lymphocytes
  - (B) they may be composed of tumor-specific transplantation antigen (TSTA)-antibody complexes
  - (C) they may act by inducing complement activating antibodies
  - (D) they may act by binding to immune lymphocytes and neutralizing their action against tumor cells
  - (E) they may cause a change in the antigenic composition of the tumor
12. All of the following statements about oncofetal antigens are true EXCEPT that they are
- (A) normal components of embryonic and regenerating tissues
  - (B) prognostic indicators used to follow patients undergoing therapy for certain malignancies
  - (C) found as membrane components of tumor cells
  - (D) diagnostic of malignancy
  - (E) sometimes secreted from cells
13. Immune responses favoring tumor growth include all of the following factors EXCEPT
- (A) immunologic suppression
  - (B) blocking factors
  - (C) enhancing antibodies
  - (D) cellular immunity
  - (E) soluble tumor antigen
- C. DIRECTION:** Each set of matching questions in this section of a list of four to twenty-six lettered options (some of which may be in figures) followed by several numbered items. For each numbered item, select the ONE lettered option that is most closely associated with it. To avoid spending too much time on matching sets with large numbers of options, it is generally advisable to begin each set by reading the list of options. Then, for each item in the set, try to generate the correct answer and locate it in the option list, rather than evaluating each option individually. Each lettered option may be selected once, more than once, or not at all.
- Questions 14-18
- 14. Polymerizes in the target cell membrane to cause cell death
  - 15. Received Food and Drug Administration approval for use against hairy cell leukemia and Kaposi's sarcoma in the late 1980s
  - 16. Antitumor factor that depresses protein synthesis in the target cell and causes the production of toxic free radicals; also called lymphotoxin
  - 17. Causes tumor cell to increase the concentration of class I major histocompatibility complex (MHC) molecules in the membrane, thus making them more susceptible to cytotoxic T-cell killing
  - 18. Activates natural killer (NK) and cytotoxic T cells to cause cancer remission in patients with malignant melanoma

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1. Proliferation of activated T-cells:
  1. Is stimulated by a single signal induced by engagement of the T-cell receptor
  2. Requires both the signal described in A plus costimulation from B7
  3. Requires both the 2 signals described in B plus interaction between LFA-1 and ICAM-1
  4. Requires only mutual binding of LFA-3 and CD2 on the antigen-presenting cell and T-cell respectively
  5. Is unaffected by mitomycin C
  
2. The early increase in phospholipase C gamma 1 activity following T-cell stimulation:
  1. Represents a sensitive regulatory negative feedback control mechanism
  2. Dephosphorylates protein tyrosine kinase inhibitors
  3. Accelerates hydrolysis of diacyl glycerol
  4. Accelerates hydrolysis of phosphatidylinositol diphosphate
  5. Accelerates hydrolysis of inositol triphosphate
  
3. A lipopolysaccharide (LPS) from Gram-negative bacteria is:
  1. A thymus-dependent antigen
  2. A type 2 thymus-independent antigen
  3. Produces high affinity IgG memory responses
  4. A polyclonal activator of murine B-cells
  5. Cross-links Ig receptors on B-cells
  
4. T-cell help for antibody production:
  1. Depends on T-cell recognition of native antigen bound to B-cell surface Ig
  2. Depends on T-cell recognition of antigen processed by the B-cell
  3. Is a feature of the antibody response to pneumococcal polysaccharide SIII
  4. Involves class I MHC on the B-cell
  5. Can occur in X-irradiated mice
  
5. Activation of resting B-cells by T-helpers depends directly upon costimulatory interaction between:
  1. B7 and CD28
  2. CD40 and CD40L

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3. B7 and CTLA-4
4. CD4 and MHC class II
5. ICAM-1 and LFA-1

6. The T-cell receptor link to MHC/peptide is enhanced by interaction between MHC class II on the antigen-presenting cells with the following molecule on the T-cell:

1. LFA-1
2. CD2
3. CD4
4. CD8
5. CD28

7. Protein tyrosine kinase activity following T-cell stimulation:

1. Phosphorylates and thereby activates phospholipase C gamma 1
2. Is an inherent property of the T-cell receptor alpha and beta chains
3. Is an inherent property of the consensus motifs in CD3 peptide chains
4. Is unaffected by herbimycin A
5. Is unrelated to phosphorylation of the CD3-associated zeta chains

8. Which is the first of the following genes to be upregulated subsequent to T-cell activation?:

1. CD23.
2. Cytokine receptor.
3. Cytokine.
4. Transcription factors concerned with G0 to G1 progression.
5. Adhesion molecules.

9. The alpha beta heterodimeric form of the IL-2 receptor:

1. Is downregulated on activated cells.
2. Binds IL-2 with high affinity.
3. Is found only on T-cells.
4. Uses CD45 as an alpha chain.
5. Allows rapid dissociation of bound IL-2.

10. The cytokine which is most involved in the class switch to IgE production is:

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1. IL-1. 2. IL-2. 3. TGF beta. 4. IL-4. 5. IL-5.

11. Cytokines:

1. Are usually around 150-200 kDa.
2. Have glycosyl phosphatidylinositol (GPI) anchors.
3. Are pleiotropic.
4. Generally act at long range.
5. Produce very stable long-lived messenger RNA.

12. Th1 cells secrete:

1. CD4. 2. IL-4. 3. IL-5. 4. IL-10. 5. Interferon-gamma.

13. IFN-gamma and TNF beta can act synergistically because:

1. TNF beta induces the formation of IFN-gamma receptors.
2. IFN-gamma prevents the formation of TNF beta receptors.
3. IFN-gamma induces the formation of TNF beta receptors.
4. They both bind to the same receptor.
5. They cross-link IFN-gamma and TNF beta receptors.

14. Which one of the following cytokines can mediate release of acute phase proteins from the liver?:

1. IL-6. 2. TGF beta. 3. IL-10. 4. IL-12. 5. LIF.

15. Bruton's congenital a-gammaglobulinemia results from a mutation in:

1. Immunoglobulin mRNA splicing
2. The gene encoding surface 5'-nucleotidase
3. An HLA gene
4. The T-cell CD40L gene
5. A tyrosine kinase gene

16. AIDS is associated with:

1. CD4 T-cell depletion
2. CD8 T-cell depletion
3. Polymorph depletion
4. Pneumococcal infection
5. Low immunoglobulin levels

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17. Deletions in the T-cell CD40L gene produce:
1. The hyper-IgM syndrome
  2. Congenital X-linked agammaglobulinemia
  3. IgA deficiency
  4. Common variable immunodeficiency
  5. Deficiency in cell-mediated immunity
18. DiGeorge syndrome results from:
1. Defective DNA repair mechanisms
  2. Defect in combinatorial joining of receptor V, D and J genes
  3. Failure of thymic development
  4. Lack of sialophorin
  5. Adenosine deaminase deficiency
19. Which of the following HIV antigens provides a potential target for neutralizing antibody:
1. p24
  2. gp120
  3. Reverse transcriptase
  4. Protease
  5. None of the above
20. Secondary immunodeficiency can result from:
1. Malnutrition
  2. X-irradiation
  3. Viral infection
  4. None of the above
  5. All of the above
21. Mutations in the gamma chain of the receptors for IL-2, 4, 7, 9 and 15 lead to:
1. Reticular dysgenesis
  2. Bare lymphocyte syndrome
  3. Loss of NK cells
  4. Severe combined immunodeficiency (SCID)
  5. Build-up of toxic nucleotide metabolites

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系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
技二		Dr 楊	____年____月____日第____節		
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1. 請說明細胞外細菌避免人體利用 phagocytosis 和補體等毒殺方法。(10%)
2. 急性發炎反應中的主要調節因子，有那些可以增加血管的通透性 (permeability) 以及調昇 (upregulate) PMN 的附著分子的表現，請各舉三種調節因子。(10%)
3. 活化的 macrophage 可以利用  $O_2$  dependent 以及  $O_2$  independent 的機制來產生殺菌活性 (microbicidal activity) 請分別各舉可以利用以上二種機制的三種分子。(10%)
4. 請問一種成功的疫苗應包括那些必要因素。(10%)