

※ 注意：全部題目均請作答於試卷內之「非選擇題作答區」，請標明題號依序作答。

一、選擇題與填充題 (每題 2 分，共 20 分)

1. Innate-like lymphocytes behave like intermediates between innate and adaptive immunity and have limited functions, they are:
  - a. B-1 cells
  - b. Mast cells
  - c.  $\gamma\delta$  T cells
  - d. dendritic cells
  - e. Thymocytes
2. Which statement(s) in the following about chemokine/chemokine receptor is (are) NOT CORRECT?
  - a. Similar to cytokines, each chemokine has one specific receptor
  - b. Chemokines can bind to cellular matrix
  - c. Chemokines are produced by immune cells only
  - d. Chemokine receptor signaling is MyD88-dependent
3. The antigen-binding region of TCR is formed by the folding of
  - a.  $V\alpha$  and  $V\beta$  chains.
  - b.  $V\alpha$ ,  $V\beta$ , and CD3 chains.
  - c.  $V\alpha$  and  $\beta_2$ -microglobulin chains.
  - d.  $V\gamma$  and  $V\alpha$  chains.
  - e.  $V_L$  and  $V_H$  chains.
4. Which of the following statements is FALSE?
  - a. TCR is allelically excluded on individual T cells.
  - b. CD4 and CD8 co-receptors are also signal transducing molecules for T cell activation.
  - c. The arrangement of  $\alpha$  chain gene segments most closely resembles that of  $\kappa$  chain.
  - d. The gene segments for the  $\delta$  chain are interspersed with those for the  $\gamma$  chain.
5. Two cytokines, produced by macrophages, that are involved in fever production, as well as septic shock and the effects of superantigen toxins are:
  - a. IL 2 and IL-3
  - b. IL-3 and IL-4
  - c. IL-1 beta and TNF alpha
  - d. IL-10 and IL-8.
6. When lymphocytes leave the circulation for the lymph nodes, they attach to certain regions of blood vessels in the lymph node called:
  - a. chemotactic response arterioles
  - b. low inflammatory venules
  - c. high endothelial venules
  - d. C-reactive centers.

見背面

7. A type of lymphocyte that has no antigen receptor, and can non-specifically kill virus-infected cells and tumor cells is:
- a. T helper cell
  - b. neutrophil
  - c. macrophage
  - d. NK cell
8. An effective vaccine is designed to induce both humoral and cellular immunity against specific antigen. Please choose which action is or actions are mediated by B cells, CD4+ T cells or CD8+ T cells.
- a. Clearance of extracellular pathogens
  - b. Clearance of intracellular pathogens
  - c. Neutralization of bacterial toxin
  - d. Help with antibody affinity maturation
  - e. Enhancement of antigen processing and presentation
  - f. Lysis of virally infected cells

B cells: \_\_\_\_\_

CD4+ T cells: \_\_\_\_\_

CD8+ T cells: \_\_\_\_\_

二、配合題

9. pick up the right answer from the below list ( 單選，共 5 分)

- \_\_\_\_\_ (1) anaphylaxis
- \_\_\_\_\_ (2) IgE mediated
- \_\_\_\_\_ (3) transfusion reaction
- \_\_\_\_\_ (4) contact hypersensitivity by nickel
- \_\_\_\_\_ (5) hay fever

- (A). Type I hypersensitivity
- (B). Type II hypersensitivity
- (C). Type III hypersensitivity
- (D). both Type II and Type III hypersensitivity
- (E). Type I, II and III hypersensitivity
- (F). Type IV hypersensitivity
- (G). all of the Type I, II, III and IV hypersensitivity
- (H). none of any type of hypersensitivity

10. (3 points) Matching:

- |                                |              |
|--------------------------------|--------------|
| _____ (i) Classical pathway    | (A) C4       |
| _____ (ii) Alternative pathway | (B) C2       |
| _____ (iii) MB-lectin pathway  | (C) factor B |
|                                | (D) C3       |
|                                | (E) MASP     |
|                                | (F) C1       |
|                                | (G) IgM      |
|                                | (H) C5       |

11. (2 points) Match the body compartment where the pathogen can be found and the most effective host defense mechanism against it:

Pathogen	Defense mechanism
_____ (i) In the cytoplasm	(A) Complement
_____ (ii) On the epithelial surface	(B) Cytotoxic T cells
_____ (iii) In the phagocytic vesicles	(C) IgA antibody
_____ (iv) At the interstitial spaces	(D) Macrophage activation

三、解釋名詞

12~26 題，每題 3 分。

12. invariant chain
13. innate immunity
14. Th17
15. Foxp-3
16. Superantigen
17. Anergy
18. pathogen associated molecular pattern
19. epigenetic regulation
20. CTLA4
21. antimicrobial peptide
22. SCID (severe combined immune deficiency)
23. antigenic shift
24. C3 convertase
25. tumor antigen
26. IL-35

27~32 題，每題 2 分。

27. Adhesion molecules
28. Antibody isotype
29. Atopy
30. Acquired immune deficiency syndrome
31. Neutrophils
32. Epitope

見背面

四、簡答題

33. (4 points) Immune organs are grouped, based on their functions, into central and peripheral organs. Please describe (i) which organs are central lymphoid organs and their functions and, (ii) which organs are peripheral lymphoid organs and their functions.
34. *Leishmania major* is a protozoan parasite that infects macrophages and monocytes, where it escapes destruction by lysosomal enzymes and escapes to replicate in vesicles. Different mouse strains respond differently to *L. major* infection: BALB/c mice produce primarily activated Th2 cells, while C57BL/6 mice produce primarily activated Th1 cells. Which mouse strain would you expect to be more resistant to *Leishmania* infection, and why? What *Leishmania*-specific effector cells would be present in infected mice from each strain? (5 分)
35. In order to study MHC restriction of T cells, you make two clones of mouse CD8 Tc cells. The first is specific for peptide A presented on H-2<sup>k</sup>, and the second is specific for peptide B presented on H-2<sup>d</sup>. You then transfect cDNA for TCR from the cells of the first clone into cells from the second clone; the transfected T cells express both TCR molecules on each cell. Which of the following target cells would be killed by the transfected T cell clone and why? (4 分)

	Target Cells	Peptide
1.	H-2 <sup>d</sup>	A
2.	H-2 <sup>d</sup>	B
3.	H-2 <sup>k</sup>	A
4.	H-2 <sup>k</sup>	B

試題隨卷繳回