國立嘉義大學 99 學年度

微生物免疫與生物藥學系碩士班招生考試試題

科目：專業英文

一、 Single choice (only one correct answer, 40 分)

1. Which of the following viruses has not been shown to cause cancer?
   (A) Kaposi's sarcoma-associated herpesviruses (B) Human Papilloma Virus
   (C) Hepatitis A Virus (D) Hepatitis B Virus (E) Hepatitis C Virus

2. *Helicobacter pylori* is responsible for
   (A) pneumonia (B) cholera (C) dysentery (D) peptic ulcer disease

3. Which of the following inhibits bacterial growth but does not kill bacteria
   (A) lysozyme (B) bactericidal agent (C) bacteriostatic agent (D) antiseptic agent

4. The lipopolysaccharide (LPS) that is found in the outer membrane of gram-negative bacteria is also known as
   (A) exotoxin (B) teichoic acid (C) murein (D) endotoxin

5. Which of the following diseases is (are) caused by prions?
   (A) scrapie (B) mad cow disease
   (C) kuru and Creutzfeldt-Jakob Disease (D) all of the choices

6. The pandemics of influenza that occurred in 1947 and 1977 were both caused by an H1N1 virus. Which of the following techniques best demonstrates the similarity between these two strains?
   (A) Cytopathologic effect (B) Hemagglutinin (C) Hemagglutination inhibition
   (D) RT-PCR (E) Southern blot

7. Which of the following is/are true of capsules?
   (A) They help bacteria escape phagocytosis by host cells.
   (B) They retain water and help prevent desiccation of the bacteria.
   (C) They prevent entry of many bacterial viruses.
   (D) all of the choices

8-10. Scientists extracted dried seeds of a particular plant with MeOH and the extract was partitioned between EtOAc and 3% tartaric acid. Subsequently, the water-soluble fractions were adjusted at pH 10 with saturated Na_2CO_3 and further extracted with $CHCl_3$. $CHCl_3$-soluble materials were subjected to a silica gel column (NH_3-saturated $CHCl_3$/EtOAc/MeOH, 20:1:1) followed by a preparative silica gel TLC (NH_3-saturated $CHCl_3$/MeOH, 9:1) to give a material containing a basic nitrogen atom. The material obtained showed an *in vitro* IC_{50} of 8.0 μg/ml against *Plasmodium falciparum*.

8. Based on the above description, the term "TLC" should be the abbreviation of
   (A) he Learning Channel (B) Total Lymphocyte Count
   (C) The Land Conservancy (D) Thin Layer Chromatography

9. Similarly, the term " IC_{50}" should be the abbreviation of
   (A) The half maximal inhibitory concentration (B) 50% of the initial condition
   (C) The 50^{th} step of ion chromatography (D) 50% of intensive care medicines

10. The material should be classified as in the group of
   (A) Alkaloid (B) Flavonoid (C) Viroid (D) Toxoid

11-13 A proteomic-based translational approach first identified an antifolate resistance in cultured myeloma cells in the presence of human plasma. Upon the presence of human plasma, the profiles of the differentially ex- pressed proteins revealed metabolic enzymes and translation machinery proteins were up-regulated. The responsible factor in human plasma was later found to be extrinsic, heat stable and very small in size. Importantly, factor-containing blood components, which may provide a preponderance of survival to otherwise sensitive antifolate-targeted cells, showed a dose-dependent adverse effect and a consequent decrease of survival rate in transfusion recipients under methotrexate (a widely used antifolate) medications.

11. Which of the following statements is most appropriate for "translational" in this context?
   (A) Communicating the message in another language
   (B) The first stage of protein biosynthesis
   (C) A research approach that seeks to move from bench to bedside
   (D) Moving every point a constant distance in a specified direction

12. Which of the following statements is *not* true of antifolate?
   (A) Blocking purine, pyrimidine and protein synthesis
   (B) Usually a folic acid analogue
   (C) Many are used in cancer chemotherapy, some are used as antibiotics, immuno-suppressants or antiprotozoal agents
   (D) Inhibiting the action of NADPH dehydrogenase

背面尚有試題

13. Which of the following treatments is most appropriate for anemic patients taking methotrexate?

(A) Transfusion of washed red blood cells (B) Intravenous factor VIII

(C) Intramuscular immunoglobulin (D) The administration of platelet concentrates

14. Tumor cells can avoid immune attack by
(A) secreting molecules such as collagen that form a physical barrier
(B) destroying immune cells such as T cells and B cells
(C) secreting TGF-β that suppresses immune response directly
(D) losing expression of MHC molecules and co-stimulatory proteins

15. Which cell does not express Class II MHC (HLA) molecules?
(A) B cell (B) T cell (C) Macrophage (D) Dendritic cell

16. Which of the following is true concerning dendritic cells?
(A) They can induce the primary T-cell response and natural immunotolerance
(B) They play an important role in the development of interferon-γ receptor deficiency
(C) They contain granules with histamine and other pharmacologically active substances that contribute to the inflammatory response
(D) They are mainly important in the defense against protozoan

17. Which of the following is not a sign of inflammation?
(A) redness (B) pain (C) heat (D) fever (E) swelling

18. Interferon (IFN) plays an important role by a virus infection, because
(A) IFN can prevent virus entry into host cells
(B) synthesized IFN from virus-infected cells can assist nearby cells to resist virus infection.
(C) IFN can induce programmed cell death within virus-infected cells
(D) all of the above

19. Flow cytometry
(A) can be used to measure cell shape, size
(B) allows single organism detection in samples
(C) allows cells to be counted or separated from other cells in suspension
(D) all of the above

20. Antigenic determinants (epitopes) bind to which portions of an antibody?
(A) Fc region (B) variable regions (C) constant regions (D) only light chain

二、 Translation Exam (每小題 20 分，計 40 分)

Please translate the following short paragraphs into Chinese. Any particular word that you do not recognize, you can write it down in English in your translated sentences.

1. Ginsenosides are biologically active saponin compounds. Although these compounds are reported to possess numerous biological activities, recent issues have arisen regarding their immunosuppressive and anti-inflammatory roles in inflammatory cells. This is principally because that inflammation, managed by a large amount of different pro-inflammatory mediators such as cytokines, nitric oxide and prostaglandin E2, is now considered as a major cause of most immunological diseases, such as cancer and autoimmunity. Furthermore, some ginsenosides can modulate these phenomena effectively by inhibiting the production of inflammatory mediators through suppressing the activation of nuclear factor (NF)-κB and its upstream signaling cascade. Cytotoxic T cells, natural killer (NK) cells, lymphokine activated killer cells and activated macrophages destroy cancer cells, virus-infected cells and transplanted cells. When immune cells attack their targets, various cytotoxic proteins such as lymphotoxin, tumor necrosis factor α (TNF-α), NK cytotoxic factor, perforin, and toxic molecules such as NO and reactive oxygen species (ROS) are typically involved. Most notably, TNF-α was originally characterized as a tumor-necrosis molecule, produced from macrophages, NK cells and T cells. However, excessive TNF-α release during inflammation causes damage to normal tissues and cells, while further augmenting the production of other inflammatory molecules, leading to chronic conditions. It is now increasingly clear that protopanaxadiol (PPD)-type ginsenosides exhibited significant inhibition of TNF-α release. (20 分)

2. The discovery that Toll-like receptors (TLRs) recognize pathogen-associated molecular patterns (PAMPs) has stimulated a barrage of research into the various ways that microbes can be recognized by TLR-expressing sentinel cells, particularly macrophage and dendritic cells. At present, 10 TLRs are expressed in man and 12 in the mouse, and many have been assigned viral PAMPs that can be recognized as ligands. Cell-surface TLRs like TLR2 and 4 are thought to recognize virion components, while intracellular TLRs like TLR3, 7, 8, and 9 are thought to detect viral nucleic acids or nucleoprotein complexes. There is growing evidence that TLRs transduce the earliest signals of the innate immune responses to microbial infections and that anti-TLR strategies are likely common amongst all successful pathogens. For viruses, a major focus of current research has been to characterize the viral strategies to neutralize either recognition or the downstream TLR signaling pathways that alert cells to viral infection. (Cell. 124: 767–782, 2006) (20 分)

三、Question (20 分)

HPV (Human Papillomavirus) is one of the most common sexually transmitted diseases. In June 2006, the FDA has approved a vaccine (Gardasil™) that will protect girls and women from HPV. If you were a man, should you get the vaccine? If Yes (or No), please give reasons for your answer. (20 分)