

生技系 微生物學期中考(I)考古題 (範圍：緒論 ~ 腸內菌)

Simple Choice

1. Which of the followings is a β -hemolytic, Gram positive coccus with a surface protein that binds with the Fc of IgG?
A. *Streptococcus pyogenes* (A 族鏈球菌) B. *Streptococcus agalactiae* (B 族鏈球菌)
C. *Staphylococcus aureus* (金黃葡萄球菌) D. *Staphylococcus epidermidis* (表皮葡萄球菌)
2. Which of the following exotoxins converts plasminogen to plasmin?
A. coagulase B. hyaluronidase C. staphylokinase D. streptolysin
3. The virulence of *Streptococcus agalactiae* is closely associated with:
A. Capsule B. LPS C. cell wall D. C polysaccharide
4. Which of the followings can be used to distinguish *Streptococcus aureus* and *Staphylococcus epidermidis*?
A. catalase test B. coagulase C. NaCl sensitivity D. All of the above
5. Which of the following procedures can be used to distinguish *Streptococcus pyogenes* and *Streptococcus agalactiae*?
1. Bacitracin sensitivity 2. CAMP test 3. Carotenoid pigment
A. 1 and 2
B. 2 and 3
C. 1 and 3
D. 1, 2 and 3
6. *Enterococcus faecalis* (糞腸球菌):
A. is a Gram negative coccus B. can hydrolyze esculin
C. is sensitive to bile salt D. All of the above are correct
7. Which of the following statements regarding *Streptococcus pneumoniae* (肺炎鏈球菌) is **NOT** correct?
A. optochin sensitive
B. possess an autolysin which becomes active in the presence of bile salt
C. possess various cytotoxins causing lobar pneumonia
D. All of the above are correct
8. MRSA describes the resistance to
A. penicillin B. methicillin C. both of the above D. neither of the above
9. *Listeria monocytogenes* can be identified by:
1. motility at 37°C 2. cold (4°C) resistance 3. CAMP positive
A. 1 and 2
B. 2 and 3
C. 1 and 3
D. 1, 2 and 3
10. The major virulence factor of *Haemophilus influenzae* type b is:
(A) Its surface pili (B) Its cell wall
(C) Its polysaccharide capsule (D) Its cell membrane
11. What is the O-antigen of Enterobacteriaceae?
(A) A cell wall lipopolysaccharide
(B) A flagellar protein
(C) A channel controlling substance taken into the organism
(D) A peptidoglycan matrix important for cellular rigidity
12. Which of the following pathogens may lead to hemolytic uremic syndrome (溶血性尿毒症候群) in children?
① Enterohemorrhagic *E. coli* (EHEC); ② *Salmonella typhimurium*; ③ *Haemophilus influenzae*; ④ *Shigella dysenteriae*

(A) ①④ (B) ②③ (C) ①② (D) ③④

13. Which of the following statements regarding the pathogen that causes typhoid fever is **NOT** true?
(A) This pathogen is classified in Enterobacteriaceae
(B) This pathogen can infect in livestock
(C) This pathogen harbors capsule that contributes to the bacterial virulences
(D) This pathogen can induce systemic infection in patients
14. Which of the following infectious diseases can be transmitted by rat flea:
(A) Typhoid fever (C) Gonorrhea
(B) Dysentery (D) Bubonic plague
15. Patient with symptoms includes headache, fever, and meningitis. The Gram-negative diplococcus was found in the CSF samples. Which of the following bacteria should be the pathogen?
(A) *Neisseria gonorrhoeae* (B) *Neisseria mucosa* (C) *Neisseria meningitidis* (D) *Neisseria sicca*
16. What condition should be avoided for samples which will be cultured for *Neisseria gonorrhoeae*?
(A) samples stored at 4°C (B) freeze-dried samples (C) both of them are not proper conditions
(D) both of them are proper conditions

Short Essay

1. Define microbiota, core microbiome and secondary microbiome.
2. Mannitol-Salt agar is a selective and differential medium. Explain how the selecting and differentiation of this medium work. What is the phenotype of *Staphylococcus aureus* on this medium?
3. What are the differences in the cell envelop between Gram positive and negative bacteria. Please indicate all unique structures in each group of bacteria.
4. Some bacteria are known to “survive” within a phagocytic cell, such as macrophage. How is this accomplished?
5. Among the three horizontal gene transfer mechanisms we discussed in the lectures, which one may have the most significant impact on the spreading of antibiotic resistance?
What does “synergistic effect” accomplish in antibiotic therapy?
6. Describe the toxins and their functions in the infections of *Bacillus anthracis* (炭疽桿菌)
7. What are the two sequelae of *Streptococcus pyogenes* primary infections?

