

系所組別：微生物及免疫學研究所乙、丁組

考試科目：免疫學

考試日期：0307 · 節次：2

※ 考生請注意：本試題 可 不可 使用計算機

- In an experimental model of septic shock, mice are infected systemically with bacille Calmette-Guerin (BCG), a non-lethal vaccine strain of mycobacteria. After 12 days, the mice are challenged intraperitoneally with lipopolysaccharide (LPS). Blood samples are taken at 2 hours and the clinical condition of the mice is monitored for up to 24 hours.
  - What cytokines would you measure in the 2-hour serum sample?
  - What mechanisms contribute to septic shock?
  - What outcome would you expect if the CD14 knockout mice were used instead of wild-type mice and why?
  - Suggest experiments to support the answers in (a) – (c). (20%)
- Describe one important unresolved question in infection and immunity (on your own opinion), why you think it's important, and what will be the possible approach to solve it? (20%)
- What are the features of the viruses that enable them to evade host defense mechanisms? (20%)
- How have tumor antigens been defined?
  - Discuss the evidence that the immune response to tumors is downregulated in tumor-bearing mice and in patients with cancer.
  - How can be the immunogenicity of the tumor antigens increased for making therapeutic vaccines? (20%)
- Explain the terminology: (20%)
  - MHC polygeny and MHC polymorphism
  - Positive selection and negative selection
  - Conventional antigen vs. superantigen
  - Pathogen-associated molecular patterns (PAMPs) and pattern-recognition receptors (PRRs)