

編號: 504 系所: 醫學檢驗生物技術學系

科目: 生命科學

本試題是否可以使用計算機: 可使用, 不可使用 (請命題老師勾選)

1. 請詳細說明單株抗體(monoclonal antibody)的製造流程及原理。(12.5%)
2. 請解釋何為細胞凋亡(apoptosis)及其可能機制。(12.5%)
3. Please describe the general principles and methods to identify human disease genes. (12.5%)
4. Please describe three classes of eukaryotic RNA polymerase. (12.5%)
5. The following statements were cited from "Journal of Clinical Microbiology, Apr. 1999" with a little of rewritten:
"The mutual phylogenetic relationships of dermatophytes of the genera *Trichophyton*, *Microsporum*, and *Epidermophyton* were demonstrated by using internal transcribed spacer 1 (ITS1) region ribosomal DNA sequences. Members of dermatophytes in the cluster of *Trichophyton* spp. were classified into three groups with ITS1 homologies, with each of them being a monophyletic cluster (100% bootstrap support). The first group consists of *Trichophyton mentagrophytes* isolates from humans, *T. mentagrophytes* var. *quinckeanum*, *Trichophyton tonsurans*, and *Trichophyton schoenleinii*. *T. mentagrophytes* var. *erinacei* and *Trichophyton verrucosum* are members of the second group. *Trichophyton rubrum* and *Trichophyton violaceum* form the third group, *T. rubrum* group. This suggests that these "species" of dermatophytes have been overclassified."
Please comment on the statements, especially on the concept of "overclassified".
(12.5%)

(背面仍有題目,請繼續作答)

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6. In an outbreak caused by Enterobacteriaceae, strain differentiation is very important in survey. Please describe the principles for the strain differentiation methods by phenotype and genotype, respectively. (12.5%)

7. In addition to causing acute and chronic hepatitis, hepatitis B virus is considered to be a major etiological factor in the development of human hepatoma. Almost all HBV-associated hepatoma studied so far harbor chromosomally integrated HBV DNA. (A) Please state one hypothetical mechanism by which the process of HBV-DNA integration into human chromosome might confer hepatocarcinogenesis. (B) How to prove your hypothesis by laboratory experiments? (12.5%)

8. Please describe the advantages and applications of biologically relevant **databases** in the research fields of medical science. (12.5%)