

臺北醫學大學九十學年度研究所博士班招生考試題目卷

九十學年度博士班
醫學研究所 基礎醫學

考試時間：90分鐘

題目試卷共一張，本試卷為第一張

1. Your boss gives you an unknown gene, named TMU, and he (she) asks you to reveal the function of TMU gene. Which of the following techniques will you plan to use? Also, please propose a working model to accomplish this project. (10%)

Technique list:

Southern-blot; ELISA; gene manipulation; micro-array;
Northern-blot; EMSA; yeast two hybrid; flow cytometry;
Western-blot; RACE; PCR/RT-PCR; DNA sequencing;
differential display; nuclear run on/off; mutation/deletion analysis;
in vitro transcription/translation; protein expression system;
computer works by PC-GENE, DNASIS or GCG softwares

2. Please describe the pivotal roles of signal transduction during carcinogenesis. (5%)
3. Please describe the causation of gout (hyperuricemia) and the principles allopurinol treatment. (5%)
4. Glossary explanation (2% each)
- A. ribozyme
 - B. active transport
 - C. tumor suppression gene
 - D. Lesch-Nyhan syndrome
 - E. cell cycle
5. 請敘述腦脊髓液(cerebrospinal fluid; CSF)的循環途徑(circulation of CSF)，亦即從何處產生經過哪些管道、孔洞以及何種特殊構造再回歸靜脈系統(8%)。此外抽取 CSF 時大多採用腰椎穿刺(lumbar puncture)的原因為何(2%)?
6. 心臟本身有訊息傳導系統(impulse-conducting system)，此系統包含哪些構造請敘述其名稱及其所在的位置(4%)。並請說明為何心房(atrium)先收縮隨後心室(ventricle)才由心尖部位開始收縮(3%)。又這些負責傳導的細胞被認為是從心肌細胞特化形成而非神經細胞，有哪些證據支持(3%)?
7. 胎兒出生經阻斷臍帶(umbilical cord)的血液循環及放聲大哭使肺部擴張後，其循環系統會出現哪些變化?(10%)
8. 試比較 monoclonal antibody 及 polyclonal antibody 之相似及相異點 (20 分)。
9. 舉出五種具血壓調節功能的內生性 peptide (endogenous peptide)，並詳述其生理功能 (20 分)。