

國立中山大學97學年度博士班招生考試試題

科目：細胞分子生物學【生醫所】

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問答題（每題 10 分）

- (1) Explain the differences between oncogene and tumor suppressor gene? (10 points)? (10 points)
- (2) What is the fluid mosaic model for biological membranes? What is the benefit for asymmetric distribution of phospholipids in cell membrane? (10 points)
- (3) How is the zinc coordinated in the Zn-finger? What is the role of the Zn-finger? (10 points)
- (4) What is myristoylation? What residue is modified by myristoylation? What type of linkage occurs? What is the biological role of myristoylation? (10 points)
- (5) A protein that contains 100 amino acids consists of a four-helix bundle where the helices are of equal length. It is observed that changing every third or fourth residue in the helices to an alanine leads to an unstable protein. How would you explain this observation? (10 points)
- (6) If you want to do the experiment about gel mobility shift assays, how to prove a specific binding of oligonucleotides with transcriptional factors? What kind of experiments can be done to further support the results of gel mobility shift assays? (10 points)
- (7) The results of promoter assay show that X protein can regulate the transcriptional activity of retinoic acid response elements. How to prove that a direct or indirect interaction of X protein with retinoic acid receptor? (10 points)
- (8) Explain the molecular events involve in protein evolution? (10 points)
- (9) What are the benefits of proteins forming higher oligomeric state *in vivo*? (10 points)
- (10) How to study the structural genomics in cell? (10 points)