

系所組別： 口腔醫學研究所甲組

考試科目： 分子生物學

考試日期：0226·節次：3

1. What is micro RNA? Please describe how micro RNA affect cellular functions? What are the potential implications and applications of microRNAs in clinical disease management? (20 points)
2. What are the potential methodologies to investigate protein-protein interaction? Please describe at least two methods. (16 points)
3. What assay(s) could be used to identify sequence of a regulatory element of a given transcription regulatory protein? and the principle of the assay(s) (16 points)
4. Please describe the difference in the organization of eukaryotic genome versus prokaryotic genome. Please also compare the difference in their gene expression regulation and transcription. (16 points)
5. What is the name used to describe the diversity of human mitochondria genome in a single cell? How does this diversity arise from? And how would you study the diversity and functional affect of specific mutations in mitochondria genome. (18 points)
6. Multiple choices: (14 points, 2 pints each)

(1) What are the proteins that protect DNA in eukaryotic cells?

- A. histones
- B. transcription factors
- C. ribosome
- D. integrin
- E. none of the above

(2) The purpose of polymerase chain reaction in molecular biology is to:

- A. identify the putative binding site of a protein in a DNA sequence
- B. clone a gene into a plasmid vector
- C. amplify a gene fragment
- D. identify the gene transcription profile in the cell
- E. study protein-protein interaction

(3) Which one of the following apparatus in charge protein synthesis in the eukaryotic cell?

- A. RNA polymerase I
- B. ribosome
- C. T7 RNA polymerase
- D. RNA polymerase III
- E. AMV reverse transcriptase
- F. RNA polymerase II

(背面仍有題目,請繼續作答)