

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：細胞分子生物學【生醫所碩士班】

題號：4056
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一、問答題 (72%)

Simple questions:

1. Simply draw an animal cell containing all the major organelles and indicated how the secretory proteins are made and released? (10 points)
2. What is microRNA? How may these RNAs participate in the regulation of gene expression of cells? (8 points)
3. Please describe how the cell cycle is controlled by different cyclin- dependent kinase molecules? (8 points)
4. The expression of gene A requires the binding of two proteins on the promoter region; please describe two different approaches to study the binding sites of those two proteins. (8 points)
5. Please describe why there is a need for having special structures at the end of eukaryotic chromosomes and for the enzyme telomerase. (8 points)
6. How is a misfolded protein recognized? How can a cell distinguish proteins that are meant for degradation? Please list two different diseases which are caused by protein misfolding and aggregation. (10 points)
7. Please write a paragraph essay in which you consider those following issues: Why cancer is describe as a disease of old age; why is cancer more common in our later years? Are most human cancers hereditary? What is the role of environmental factors in cancer causation? The establishment of an aggressive, metastatic cancer involves a "Darwinian struggle" among clonal populations; how does clonal selection serve a promote cancer progression? (12 points)
8. Please describe ions and membrane features affect membrane potential of a neuron. (8 points)

二、名詞解釋 (28%)

Please define the following terms :

1. Autophagy
2. Senescence
3. Transforming growth factor receptor pathway
4. Gap junctional communication (GJC)
5. Peroxisome
6. proto-oncogenes
7. Lipid rafts