

編號： 349

國立成功大學九十七學年度碩士班招生考試試題

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系所：生理學研究所甲、乙組

科目：生命科學及技術

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）

考試日期：0302，節次：3

1. Once heart beat and breathing stop, an organism is dead. Please describe the criteria to define that (I) cell is alive, (II) cell is aged, and (III) cell is death. (25%)
2. Genetic information is transferred from DNA to messenger RNA (mRNA) and then the information of mRNA is used to synthesize protein. (I) Please describe what is microRNA (miRNA)? (II) Diagram the biogenesis pathway of miRNA. (III) Discuss the physiological functions and possible role of miRNA in human diseases. (25%)
3. Please design three experiments to test the hypothesis that there is sexual difference in brains. The experimental designs should include "research rationale" and "methods" and "expected results". (25%)
4. Please explain the following bio-techniques and the purposes to use those techniques (merely translate into Chinese is discouraged): (25%)
 - a. chromatin immunoprecipitation assay
 - b. real-time polymerase chain reaction (PCR)
 - c. in situ hybridization
 - d. two-dimensional array
 - e. gene therapy