

國立成功大學

113學年度碩士班招生考試試題

編 號：261

系 所：微生物及免疫學研究所

科 目：分子生物學

日 期：0202

節 次：第 3 節

備 註：不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Please describe or define the following terms: (30%)
 - (1) nonsense mutation
 - (2) epigenetics
 - (3) Shine-Dalgarno sequence
 - (4) chaperon
 - (5) polycistronic mRNA
 - (6) small interfering RNA (siRNA)
2. Please describe the four levels of protein structure (10%).
3. As a molecular biologist, you discover a novel gene A that may be involved in the regulation of gene B. Please design experiments to determine:
 - (1) whether gene A is a transcription factor for gene B (10%) and,
 - (2) which amino acid region/ domain on protein A (encoded by gene A) is responsible for the regulation (10%).* Please be sure to describe the experimental process in detail.
4. Please describe two techniques (4%) and give details how the techniques work (16%) for studying protein-protein interactions.
5. Please explain the working mechanism of CRISPR/Cas9 system (15%) and give at least one example of application (5%).