

國立成功大學

112學年度碩士班招生考試試題

編 號：269

系 所：微生物及免疫學研究所

科 目：分子生物學

日 期：0207

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. Short-answer questions (40%)

Please define, interpret, or illustrate the following terms used in molecular biology:

- (1) real-time PCR
- (2) reverse transcription
- (3) monocistronic mRNA
- (4) RNA interference
- (5) Promoter
- (6) Primer
- (7) CRISPR (clustered, regularly interspaced, short palindromic repeats)
- (8) Okazaki fragment
- (9) open reading frame
- (10) The "central dogma" of molecular biology

2. Please explain why DNA replication is not 3'- to 5'-end. (10%)

3. Please describe four levels of gene regulation mechanisms in eukaryotic cells. (10%)

4. If you are a scientist, please describe your strategy to utilize mRNA-based vaccine in cancer therapy. (20%)

5. Please describe the processes that occur during the autophagic destruction of a mitochondrion. (20%)