國立成功大學
111學年度碩士班招生考試試題

編　號：325

系　所：臨床醫學研究所

科　目：分子生物學

日　期：0220

節　次：第 3 節

備　註：不可使用計算機

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考試日期：0220，節次：3

※ 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。

一.簡答題：（100 分）

1. Please describe briefly the five different most common methods that can be used for measuring or detecting gene expression in eukaryotic cells. (15%)
2. Explain the following terms: (a) miRNA (b) long non-coding RNA (c)shRNA (d) DICER (10%)
3. Propose several possible mechanisms to explain why a transcription factors can active transcription by binding to a DNA element located at 1000 bp upstream form the initiation site? (10%)
4. Please describe how the cells communicate with each other at molecular level (10%)
5. Please describe the role of intron and exon in the alternative splicing of RNA transcripts, and how alternative splicing affects the generation of mature proteins and their potential functions. Give an example of a gene of your interest. (15%)
6. The Nobel Prize in Physiology or Medicine 2018 was awarded jointly to James P. Allison and Tasuku Honjo for their discovery of cancer therapy by inhibition of negative immune regulation. Describe briefly their novel important discoveries. What are their significance and impact on biomedical research and cancer therapy? (10%)
7. Please describe the "cell therapy" and give two examples of their potential application and limitation in human diseases (10%)
8. What is precision medicine? Please describe its importance and application in medicine. (10%)
9. Please describe CRISPR (clustered regularly interspaced short palindromic repeats) in terms of its function and mechanism in organisms and its application in molecular biology. (10%)