國立嘉義大學九十五學年度

微生物與免疫學系碩士班招生考試試題

科目：分子生物學

一、申論題（90%）

1. How does cAMP regulate the *lac* operon? The *lac* operon is always off when culturing the *E. coli* in the medium containing both glucose and lactose. Why?（20%）

2. Nuclear splicing requires formation of a spliceosome and proceeds through a lariat. Please describe the terms of spliceosome and lariat, respectively.（20%）

3. Polymerase chain reaction is an important tool to produce DNA molecules of interest. However, the drawback of this technique is the high-risk of carry-over contamination of previously amplified products. Please describe in detail how you would do to prevent such contamination during the PCR procedure.（25%）

4. Automated sequencing, regardless the manufacturers of the machines, is now widely available to researchers who are in biotechnological fields. Please describe, in detail, the principle of the sequencing technique with comments on its advantages and disadvantages.（25%）

二、簡答題（10%）

1. In *E. coli*, the concentration of tryptophan could regulate the *trp* operon by attenulation mechanism. Take *trp* operon as an example to explain what is attenulation.（5%）

2. What is telomere? Why is it important for linear genomes on eukaryotic cells?（5%）