

※ 注意：請於答案卷上依序作答，並應註明作答之部份及其題號。

Part I: 50%

1. Describe the differences between eukaryotic and prokaryotic transcription and translation systems in terms of 1) promoter sequences, 2) properties of RNA polymerases, 3) transcription termination, and 4) translation recognition sites of ribosome. (15%)
2. Describe the structures and functions of zinc finger, leucine zipper, and helix-turn-helix domains of proteins. (10%)
3. Describe the differences among simple transposon, composite transposon, and retrotransposon. (10%)
4. Arabidopsis MYC protein is able to regulate several genes. 1) Describe a method which can identify that MYC is located within nucleus. 2) In order to further study the properties of MYC, the large amount of MYC protein is needed. Describe a method which allows you to obtain MYC protein with high purity. 3) Arabidopsis MYC protein is a transcription factor. Describe a method which shows that MYC is capable of binding DNA. (15%)

Part II: 50%

5. Describe the application of isotope, stable isotope, BrdU (bromouracil), restriction enzyme, DNA ligase, Southern/Northern/Western blotting, in vitro translation, and ChIP. (10%)
6. Describe the molecular mechanism of gene conversion in yeast. (10%)
7. Describe the following factors require for eukaryotic growth factor (GF) signal transduction pathway to permit cell cycle progression: RTK, Grb2, SOS, RAS, RAF, MEK, ERK, scaffolding proteins of CNK and KSR, Rb/E2F, cyclin/CDK complex. (10%)
8. Describe the UvrABC, MutT/M/Y and MutS/L/H repair system in bacteria. (10%)
9. How to stabilize the end length of chromosome. (10%)

試題隨卷繳回