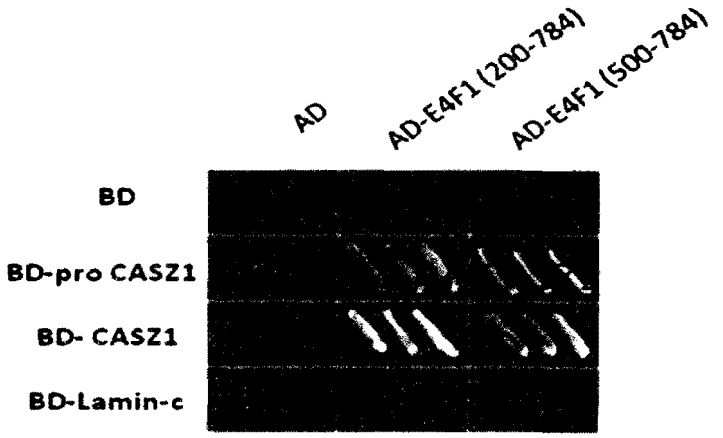
PART I

1. Describe the difference between the term of "siRNA" and "miRNA" briefly. (at least three points) : **(5%)**
2. Please briefly describe 3 methods to study transcription. **(5%)**
3. A yeast two-hybrid experiment was performed using the parts of two proteins shown in the figure (E4F1and CASZ1or the unprocessed version called pro- CASZ1). The white streaks are yeast cells growing without added histidine and 12 different petri dishes without histidine were used for the 12 different combinations. Summarize the conclusion(s) based on these data. **(10%)**



4. Describe the assembly of the spliceosome. **(10%)**
5. Compare and contrast DMS (DNA gel mobility shift) and DNase footprinting. Why is the former method more precise than the latter? **(5%)**
6. Present a model that explains the interaction between TBP and TATA-containing or TATA-less promoters. **(5%)**
7. What are the primary differences in translation initiation between prokaryotes and eukaryotes? During translation elongation, what two groups of the complete ribosome complex move relative to each other? What is the molecule called Peptidyl Transferase and what is its function? **(10%)**

(背面仍有題目,請繼續作答)

PART II

1. Please briefly describe the following terms
   (1) Promoter (3%)
   (2) Telomerase (3%)
   (3) Wobble hypothesis (3%)
   (4) Alternative splicing (3%)
   (5) Transcriptome (3%)

2. Please briefly describe the following methods
   (1) Microarray (3%)
   (2) Chromatin immunoprecipitation assay (3%)
   (3) Transgenic mice (3%)
   (4) Electrophoretic mobility shift assay (3%)
   (5) Two-dimensional electrophoresis (3%)

3. What is epigenetic regulation? (5%)
   Please describe its correlation with disease. (5%)

4. What is SNP (5%)
   Please describe its importance and application in medicine. (5%)