

一、 解釋名詞：(每題 4 分)

1. replicon
2. replisome
3. operon
4. MAR sequence

二、 問答題：(除第一題為 14 分外，其餘每題為 10 分)

1. 試述真核生物與原核生物其基因轉錄時的調控方式(分別敘述)。
2. 請定義 cis-acting element 及 trans-acting element。前者在真核的起動子上可分為那幾類？
3. Enhancer 的功能為何？有那些特徵？
4. Methotrexate is a chemotherapeutic drug for cervical cancer, what does it do to cancer cells? How do cells become resistant to this drug?
5. In mammals, genes inherited from the mother and the father can be differentially expressed. What is the basis for this phenomenon?
6. What is 'zoo blot'? What information would you gain from a 'zoo blot'?
7. Mutations are often concentrated at the sites called hotspot in a gene. Explain why the sites containing 5-methylcytosine are always the hotspots for spontaneous point mutation.
8. How is the stringency of a hybridization experiment controlled?