

系所組別： 生理學研究所乙組

考試科目： 細胞及分子生物學

考試日期：0308·節次：2

※ 考生請注意：本試題 可 不可 使用計算機

All of the following statements are FALSE. Correct them and explain your answers briefly.
(10% each)

- 1) Hydrogen bonds in water are too weak to influence the conformation of proteins.
- 2) SDS gel electrophoresis separates proteins by molecular weight, because all proteins solubilized in SDS have the same amount of charge.
- 3) Chromatin in a living eukaryotic cell usually adopts the extended beads-on-a-string form to ensure that every gene can be regulated simultaneously.
- 4) The amount of a protein present in the cell at a steady state depends on its rate of synthesis, its catalytic activity, and its rate of degradation.
- 5) Of the major control points in gene expression (transcription, translation, and mRNA degradation), translation is used most often because it serves as an essential link between mRNA and protein.
- 6) A coding region of a gene present in a genomic library must be represented in a cDNA library prepared from the same tissue.
- 7) Since membrane proteins and lipids are held together by hydrophobic interactions, all of them diffuse freely in the biomembranes.
- 8) Since $[Na^+]_o$ is higher than $[Na^+]_i$ and Na^+ permeability is higher than K^+ permeability under normal conditions, the resting membrane potential is inside negative for most cells.
- 9) After acetylcholine is released from cells, it is long-lived in order to reach target cells all over the body.
- 10) Activation of myosin movement on actin filaments (cross-bridge movement) can be triggered by phosphorylation of troponin in smooth muscles or by Ca^{2+} binding to tropomyosin in skeletal muscles.