

國 立 清 華 大 學 命 題 紙

95 學年度__生命科學院、生命科學院醫學生物科技學程__系(所)__甲__組碩士班入學考試

科目__細胞生物學__ 科目代碼__0806、1105__共__1__頁第__1__頁 *請在【答案卷卡】內作答

1. What is the “dynamic instability” of microtubules? How does this property influence the function(s) of microtubules? (10%)
2. Describe the roles of tropomyosin and troponin in muscle contraction. (5%)
3. What is the light source of confocal microscope? Why confocal microscope has advantage over conventional fluorescence microscope? (5%)
4. Describe an experiment to demonstrate that tight junctions create a permeability barrier. (5%)
5. There are two basic kind of Endoplasmic Reticulum (ER). What are they? What are the differences of these two kinds of ER in terms of their morphology and function? (8 %)
6. Give a brief description of the three main classes of membrane proteins according to their mode of attachment to the membrane. Which class of the membrane protein is the easiest one to be isolated from membrane? Why? (11%)
7. Please explain the following terms: (6%)
 - (1) Microsomes
 - (2) Endomembrane system
 - (3) Glycoproteins
8. Explain how simple diffusion can be distinguished from facilitated diffusion, and how active transport can be distinguished from passive transport. (9%)
9. Compare the characteristics of action potential with those of synaptic potentials. (8%)
10. Explain how action potentials are regenerated along axon. (8%)
11. Please define the following terms: (16%)
 - (1) NO
 - (2) Ran
 - (3) Nuclear lamina
 - (4) The function of MPF
12. Please describe the current model for the signal mechanism of cotranslational import (9%)