

1. Please describe the properties of pluripotent stem cells? How to generate induced pluripotent stem cells? (10 pts)
2. Describe the principle of how RNA interference (RNAi) regulate gene expression. (10 pts)
3. What is autophagy? (10 pts)
4. Describe the sliding filament model of muscle contraction. (10 pts)
5. Explain why apoptosis might play a crucial role in combating the development of cancer? (10 pts)
6. Cells in the tissues are surrounded by an extracellular matrix (ECM). Please describe the properties and functions of those molecules constitute the ECM. (10 pts)
7. Ca^{2+} is an important cytosolic second messenger and is involved in various cellular activities. Give 3 examples of cellular activities in which Ca^{2+} plays a role and describe the mechanisms. (10 pts)
8. The lipid bilayer is a natural limit for the passage of molecules. However, depending on the properties of the molecules, cell has developed different ways to move the molecules across the membranes. Describe the general mechanisms responsible for the movement of molecules across the lipid bilayer. (10 pts)
9. Microscope is a basic tool for cell biology. Describe the principles and applications of 3 microscopic techniques now applied to study the functions of a cell. (10 pts)
10. Explain the following terms (2 pts each)
 - i. Proplastid
 - ii. Plasmodesma
 - iii. Ligin
 - iv. Golgi apparatus
 - v. Ubiquitination

試題隨卷繳回