

ESSAY ASSIGNMENT FOR

Core Module XI: Cell Biology

(PHYO6100 & MMPH6007)

Write a 1000-word essay on **ONE** of the following topics. Submit the assignment to the Department of Physiology (L04-53, Lab. Block, General Office, Faculty of Medicine Building., 21 Sassoon Road.) on or before **May 3, 2011**.

1. Is nucleolus a ribosome factory?
2. Describe the different roles of immune cells and their communication.
3. Discuss the various strategies to promote axonal regeneration in the central nervous system.
4. What is a cancer stem cell? Discuss its impact on cancer treatment.
5. Discuss whether the apoptic pathways could be targeted in cancer chemotherapy.
6. Neurotrophic factors influence cell proliferation, survival differentiation, migration, axon and dendrite growth, synaptic plasticity and the interactions of neuronal and glial cells. They play critical roles in complex behaviors including feeding, anxiety, depression and learning.

What are the important implications of neurotrophic factors for the treatment of a variety of neurological diseases including disorders of neural development and as well as diseases of the differentiated nervous system including Alzheimer's disease, Down syndrome, Parkinson's disease, Huntington's disease, epilepsy, stroke, and peripheral neuropathies?

7. Genome wide sequencing performed in several colon cancer patients in Hong Kong have identified a mutation in a gene, X. Preliminary study found that the cells carrying the mutant gene X enter M phase faster than normal cells. Please first describe the possible functions of this gene in mitotic regulation and then design experiments to demonstrate one of the proposed functions.