

**UNIVERSITY OF LONDON**  
**NEUROSCIENCE MSc EXAMINATION**

**For Internal Students of the  
INSTITUTE OF PSYCHIATRY  
King's College London**

**8<sup>th</sup> March 2010 10:00 am - 12:30 pm**

**Developmental Neurobiology**

**PAPER B3**

**Answer FOUR questions only**

1. Discuss the evidence that both cell intrinsic and extrinsic mechanisms operate in the vertebrate neural tube to generate cell diversity.
2. How can fate maps be used in studying neural development?
3. Describe the role of the anterior neural border in zebrafish forebrain development. Name the similar cell population in mammals and explain the functional/molecular differences between these fish and mammalian cell populations.
4. Critically review the evidence that both microtubules and actin filaments are important for growth cone pathfinding.
5. What is the role of autophagy in the nervous system and why is it so important?
6. 'The process of synaptic pruning during circuit formation is mainly shaped by neuronal activity'. Discuss this statement using examples from two different systems to illustrate your answer.
7. Explain the term 'epigenetics' and, using examples, how it has contributed to our knowledge of specific neurodegenerative and neuropsychiatric disorders.
8. Discuss the functions and the potential therapeutic role of endogenous stem cells in the context of CNS diseases/injuries.