

**KING'S COLLEGE LONDON**  
**INSTITUTE OF PSYCHIATRY**  
**MSc NEUROSCIENCE EXAMINATION**  
**12<sup>th</sup> March 2014 at 14.00-16.30pm**  
**Developmental Neurobiology**  
**B3 WRITTEN EXAMINATION**

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Answer **FOUR** questions only – **one question from each section:**

**Section 1**

1. How can fate maps be used in studies of neural development?
2. Describe two major neuronal types in the cerebral cortex and their origin and migration in the developing cortex and discuss how migration defects of these cell types could lead to the neurodevelopmental disorders.

**Section 2**

3. Can Drosophila be used to understand human disease?
4. How did the genetic tools in C. elegans allow discovery of genes for human longevity?

**Section 3**

5. Discuss possible in vitro and in vivo methods for studying the pathogenesis of disorders such as autism and schizophrenia and outline potential drawbacks.
6. How do excitation and inhibition interact to facilitate circuit plasticity?

**Section 4**

7. Discuss and critically evaluate the link between adult hippocampal neurogenesis and depression.
8. Discuss how you would use induced pluripotent stem cells to identify disease mechanisms in a neurological disorder of your choice.