

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

**INSTITUTE OF PSYCHIATRY**  
**King's College London**

**4<sup>th</sup> March 2013 at 13.30-16.00pm**

**Behavioural Genetics**

**B1 WRITTEN EXAMINATION**

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**Answer FOUR questions only**

1. Describe the architecture of the human nuclear genome in the context of current genomic research, in particular findings from the ENCODE project.
2. Our ability to easily genotype single nucleotide polymorphisms (SNPs) has transformed association studies. Describe how association studies are designed and analysed, including both single SNPs and genome-wide studies.
3. Neurodevelopmental disorders such as autism, ADHD and Tourette disorder often co-exist. What are the genetic and environmental influences that may bring about such co-existence, and how can they be investigated?
4. Discuss the concept of endophenotype. How has research on cognitive and brain endophenotypes in ADHD improved our understanding of the disorder?
5. Describe how the study of monozygotic twins can help estimate the extent to which environmental factors play a causal role in the development of psychopathology.
6. Why is it important to study the nature of the intergenerational transmission of psychiatric disorders? Discuss the methods that behavioural genetic researchers use to do this.
7. Using examples, discuss why genetically sensitive longitudinal designs are important and what they have shown.
8. State two main approaches for studying DNA methylation and explain one of the approaches in detail including its advantages and limitations.