

## **Full Time MSc Neuroscience Programme 2010 - 2011**

### **Titles for Essay A1**

**Submission Deadline Midday on 21<sup>st</sup> October 2010**

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| 1  | How has homologous recombination helped neuroscience?  | Jon Cooper     |
| 2  | Describe the mechanisms by which astrocytes communicate with each other and discuss the evidence of how this might influence synaptic activity.  | Arthur Butt    |
| 3  | What is the biological basis of the endogenous "clock" in the suprachiasmatic nucleus of the hypothalamus? What are the main scientific developments that have led to our understanding of the system? | Iain Campbell  |
| 4  | RNA splicing and RNA editing are important post-transcriptional events that affect many receptor genes. Discuss how these changes affect receptor function.  | Andrew Makoff  |
| 5  | Describe the properties of ion channels, discussing the mechanisms by which they gate voltage, specific ions and ligands as well as their selectivity properties.                                      | Andrew Wong    |
| 6  | How is it possible for there to be greater than one hundred thousand different human proteins and only around 25,000 genes in the human genome?  | Angela Hodges  |
| 7  | Describe the opposing functions of proneurotrophins and neurotrophins, and critically discuss using published data.  | Uwe Drescher   |
| 8  | Compare and contrast how the permeability transition pore and Bcl-2 family members activate caspases and how these pathways could be targeted to prevent neurodegeneration.                            | Claudia Hooper |
| 9  | SOD1, TDP-43 and FUS: What have each contributed to our understanding of amyotrophic lateral sclerosis genetics and pathogenesis?  | Chris Shaw     |
| 10 | What is the evidence that the autoimmune response in JNCL is pathogenic?   | Jon Cooper     |