KING'S COLLEGE LONDON

INSTITUTE OF PSYCHIATRY, PSYCHOLOGY AND NEUROSCIENCE

MSc NEUROSCIENCE EXAMINATION

16th March 2015 at 14.00-16.30pm

Neurodegeneration

B4 WRITTEN EXAMINATION

Answer FOUR questions only

1. Given the recent failure of phase II trial for Cogane®, the GDNF and BDNF release promoter, for Parkinson's disease, which drug targets should we look to next for neuroprotection?

2. Discuss the brain regions and cell populations most severely affected in the neuronal ceroid lipofuscinoses.

3. How can autophagy be manipulated to treat neurodegenerative diseases?

4. Discuss how p25 formation is dysregulated in Alzheimer's disease and describe the functional impact of p25 dysregulation.

5. What is the main technique used in zebrafish to remotely control neuronal activity? How does this technique work? How can this approach be used in a very specific neuron or set of neurons?

6. Review the neurochemical basis for current treatments for Alzheimer's disease. Critically evaluate the following statement: the most pressing need for people living with Alzheimer's disease is better symptomatic treatments.

7. Discuss frontotemporal dementia and motor neurone disease with hexanucleotide repeat expansion mutations of C9ORF72 as a specific type of TDP-43 proteinopathy. Why is the discovery of mutations in C9ORF72 important and what is its relevance to frontotemporal dementia and motor neurone disease?

8. Discuss the main metabolic changes found in inflammatory foci in models of multiple sclerosis.