

Investigating the neurobiology and psychopharmacology of cognitive enhancing compounds

Supervisor: Dr Phil Burnet

Cognitive deficits are a natural consequence of aging, and a symptom of debilitating psychiatric disorders such as schizophrenia. Glutamate signalling via the N-methyl-D-aspartate receptor (NMDAR) is crucial for executive brain functions (attention, working memory), and its reduced activity is postulated in schizophrenia. The inclusion of NMDAR stimulating agents to standard therapies of schizophrenia provides some symptom alleviation, and rescues memory impairment in models of aging. We are currently exploring the neurobiological and cognitive effects of nutritional compounds and the role of the NMDAR.

This project will examine whether the intake of a prebiotic (gut bacteria nutrient) and/or a D-amino acid improves cognitive abilities and mood in human subjects and experimental models. The candidate will have the opportunity to apply a multidisciplinary approach to their research, and use state-of-the-art techniques such as, human psychometric analyses, functional brain imaging, neurochemical, neuroendocrine and immunological measures, rodent paradigms, molecular biology, genetics and neural cell cultures. The project will extend current collaborations within and outside Oxford University, and will be supported, in part, by funding from the Biotechnology and Biological Sciences research Council (BBSRC). The day-to-day running of the project will be supervised by Dr Phil Burnet (phil.burnet@psych.ox.ac.uk), and members of his team.

Burnet PW (2012). *Proc Natl Acad Sci U S A*. **109**:E175

Burnet PW, Anderson PN, Chen L, Nikiforova N, Harrison PJ, Wood MJ (2011). *Mol Cell Neuroscience*. **46**:167-75.

Billard JM (2012). *Amino Acids*. **43**:1851-60.