BSc in Reproductive & Developmental Sciences &

BSc in Surgery and Anaesthesia Project Outline 2011-2012

**Project Title: Do Cognitive enhancers reduce the effect of background noise on continuous performance tasks?**

**Academic Supervisor: Colin Sugden**

**Division: Surgery and Cancer**

**Section: Surgery**

**Co-supervisor:**

**Who will be responsible for day-to-day supervision? Ian Flindall**

**Contact Details of Person whom Medical Student should contact for further details:**

**Name: Ian Flindall Email: I.Flindall@imperial.ac.uk Tel: 07515877624**

**Group’s Research Interest: Cognitive Enhancement**

(Double click the appropriate check box to indicate your choices below)

**Is this a clinical [ ]  or laboratory [x]  project?**

**Suitable project for: Reproductive and Development**  **Sciences** Yes **[ ]** No **[ ]**

**Surgery and Anaesthesia** Yes **[x]** No **[ ]**

**Synopsis of project (background/research question/methods to be used/relevant key references):**

Modafinil is a cognitive enhancer that has had publicity for its off prescription use by students, academics and the military. It has been found to improve working memory especially in sleep deprived individuals. This study will assess its impact upon concentration (i.e. attention) in non sleep deprived scenarios aimed at disrupting the individuals attention. Although the actual mechanism of Modafinil is unknown there is a possibility it is involved in the dopamine pathway in the prefrontal cortex. Background noise has been found to decrease dopamine secretion in the prefrontal cortex thus reducing attention in healthy individuals. The student will therefore conduct a Double blind Randomized crossover study using various cognitive tasks (such as the N-Back task) in quiet and noise polluted backgrounds and assess the impact on individuals who receive placebo and Modafinil.

Previous students involved with Modafinil have obtained a paper, oral and poster presentation. This study will allow the student to conduct a trial involving medications. They will need to develop skills in liaising with participants in order to conduct the study. They will need to be able to follow protocols and record data accurately for later analysis. The student will develop insight into the ethics of Modafinil and its potential uses. There is significant interest in Modafinil by the press with articles recently printed in the Times.

Papers of interest are:

General info:Gribbin, S., 2008. Towards responsible use of cognitive-enhancing drugs by the healthy. *Nature*, 456(11 December), pp.702–705.

General info: Sahakian, B. & Morein-Zamir, S., 2007. Professor's Little Helper. *Nature*, 450(20-27 December), pp.1157–1159.

Recent paper from the department: Sugden, C. et al., 2011. Effect of Pharmacological Enhancement on the Cognitive and Clinical Psychomotor Performance of Sleep-Deprived Doctors: A Randomized Controlled Trial. *Annals of surgery*.

Will the research involve work done under the Animals (Scientific Procedures) 1986 Act? Yes **[ ]** No **[x]**

**If YES*,***

Will the student be required to undergo Home Office training? Yes **[ ]** No **[ ]**

Are the appropriate project and personal licences in place? Yes **[ ]** No **[ ]**

**Project licence**:

Licensee

Date of issue

Number

**Personal licence**:

Licensee

Number

**Will the research involve the use of genetically modified tissue?** Yes **[ ]** No **[x]**

**If YES**

Has the work been approved by the relevant GM Committee Yes **[ ]** No **[ ]**

Date approval was granted

Reference Number

**Will the project involve work on human subjects, human tissue or access to confidential patient information?** Yes **[x]** No **[ ]**

## If YES

## has ethical approval been obtained Yes [ ]  No [x]

## Date approval was granted

## IC REC or IRAS REC number

**Note: Approval for any of the above MUST be in place before the student begins the project.**

**A risk assessment form will be required.**

**Project Payment**: I have an F account Yes **[ ]** No **[x]**

## If you have an F account please give full account code: