BSc in Reproductive & Developmental Sciences &

BSc in Surgery and Anaesthesia Project Outline 2011-2012

**Project Title:** Clinical Anatomy in virtual worlds

**Academic Supervisor:** Mr Barry Paraskeva

**Division:** Surgery

**Section:**

**Co-supervisor:** Eddie Edwards/David Taylor/James Kinross/Daniel Cohen

**Who will be responsible for day-to-day supervision?** Daniel Cohen

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

**Name: Email: Tel:**

Daniel Cohen daniel.cohen@imperial.ac.uk

**Group’s Research Interest:**

The use of Virtual World environments for medical and surgical education

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

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

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

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

**Background:**

Virtual Worlds are multiuse, flexible, interactive environments in which people interact by voice or text using an avatar. One of the great potential uses of virtual worlds is to enable learning within an environment that would be impossible to create in real life; access to the environment can be achieved by using a computer with a broadband internet connection.

The Division of Surgery has acquired state-of-the-art software that can reconstruct CT and MRI images in 3 dimensions for anatomy education and possibly clinical purposes.

**Study aims:**

The aims of this project are:

1. To establish the feasibility of recreating 3D scans with varying clinical pathologies in the virtual world
2. To establish the uses and potential benefits of using the scans for anatomy education within a virtual environment, as an adjunct to existing methods of training.
3. To validate the virtual world anatomy model as an educational tool.

This is the first time a concerted effort has been made to create and assess a full scale anatomical training tool in the virtual world.

**Study design:**

The project will be divided into two phases: 1. Technical development and 2. Validation of educational technology

During the first phase, the student will work with our in house team of developers to create an educational platform within a virtual world for teaching anatomy. Only a basic level of computer experience is required for this project and no previous knowledge of computer programming is necessary. During this project, the student will however develop skills in computational manipulation of anatomical images, the virtual world and in image manipulation. Students will work as part of a multi disciplinary team, and will have access to world leading experts in this area.

The study will be a case-control study in medical students. A group of 3rd year students will be exposed to a surgical anatomy lecture and their surgical anatomy knowledge assessed pre and post lecture by MCQ. The study group will have an additional surgical anatomy session in the Virtual World, utilising the recreated 3D scans with relevant pathology. The same MCQ will be repeated to determine the additional learning gained from virtual worlds and also a participant feedback questionnaire will be circulated. Participants will have the opportunity to feedback their experiences verbally.

Our expectation is that the project would be written up by the student and supervisors for submission to a relevant conference and/or journal.

**References / background reading**

For more information on previous virtual world projects carried out by the Division of Surgery please visit <http://tinyurl.com/medmedia>

*1. Taylor D, Patel V, Cohen D, Aggarwal R, Kerr K, Sevdalis N, et al. Single and multi-user virtual patient design in the virtual world. Stud Health Technol Inform 2011;163:650-2.*

*2. Patel V, Aggarwal R, Osinibi E, Taylor D, Arora S, Darzi A. Operating room introduction for the novice. Am J Surg 2011.*

*3. Leong JJ, Kinross J, Taylor D, Purkayastha S. Surgeons have held conferences in Second Life. Bmj 2008;337:a683.*

*4. Wiecha J, Heyden R, Sternthal E, Merialdi M. Learning in a virtual world: experience with using second life for medical education. J Med Internet Res 2010;12(1):e1.*

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 **[x]**

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

**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 **[ ]**

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