

## ***EPSRC CDT in Synthesis for Biology and Medicine 2017***

### **Friday 6 January: Module on “Chemical Aspects of Neuroscience”**

Venue: Rex Richards Building, Seminar Room 1b

Module Leaders: Prof. Stephen Faulkner and Prof. Harry L. Anderson

During the course of this one-day module, please think about one example of where organic synthesis can contribute towards an area of neuroscience research. Identify one point where chemistry can contribute to solving problems in this field. You should consider what further information you would need before realistic molecular designs can be finalised. Write notes on the back of this sheet (these notes will be collected at the end of the day), and be prepared to talk about your ideas for 2–3 minutes in the group discussion session at 16:30 (a white board will be available).

### ***Morning Session: Concepts and Chemistry***

#### **09:45 Introductions**

#### **10:00 Fundamentals (HLA and SF)**

What is a neuron? What is an action potential? Ion-channels; synapses; neurotransmitters; markers; cell potentials; patch-clamp techniques and electrophysiology

10:45 Discussion

11:00 Coffee break

#### **11:15 Photo-Active Molecular Tools for Neuroscience (HLA)**

Caged compounds, optochemical genetics, voltage-sensitive dyes, multi-photon microscopy

11:45 Discussion

#### **12:00 Imaging the Nervous System (SF)**

Molecular probes, fluorescent probes, MRI, CT, uptake and channels, timescales

12:30 Discussion

12:45 Lunch

### ***Afternoon Session: Applications and Outlook***

14:00 **Antony Galione**, Professor of Pharmacology, University of Oxford, will give a presentation on ***“Probing and manipulating signals in cells”***

15:00 **Simon Butt**, Associate Professor of Neuroscience, Department of Physiology, Anatomy and Genetics, University of Oxford, will give a presentation on ***“Mapping the Developing Brain”***

16:00 Coffee

#### **16:30 GROUP DISCUSSION**

17:30 Close

Name of Student: .....

Write here brief notes on one topic where you suspect that organic chemistry can contribute to solving problems in the field of neuroscience, or provide useful tools for research. Suggest possible molecular designs and consider what further information you would need before finalising your design.