

## Rank Prize Lord Selborne Scholarship

<b>Award</b>	Rank Prize Lord Selborne Scholarship
<b>Department</b>	Department of Experimental Psychology
<b>College</b>	Pembroke College
<b>Studentship</b>	Fees (at home or overseas rate as appropriate) and living costs at up to UKRI rate, plus an allowance for consumables and attending conferences.
<b>Contract type</b>	Fixed term for 3 years (with the possibility of 6 months extension on application to the Rank Prize Funds in the final year)
<b>Reporting to</b>	Professor Hannah Smithson
<b>Additional information</b>	The Lord Selborne Scholarship is a prestigious new scheme to support and encourage the next generation of researchers in vision science. The Lord Selborne PhD Scholarship has been set up in honour of our former Chairman, Lord Selborne (1940-2021). Lord Selborne was the Chairman of Rank Prize for nearly 30 years, retiring only in 2015. He led the organisation through its formative years with great wisdom and foresight as well as charm and charisma. His legacy is the universally high esteem in which Rank Prize is held today.
<b>Reference Code</b>	24EXPY01WEB
<b>Closing date</b>	21 June 2024

### Introduction

Optimising spatial and spectral performance of a trichromatic retina

The human trichromatic retina contains three classes of spectrally-selective cone photoreceptors, which collectively support human colour vision. It is less commonly discussed that these same cones support all visual functions in daytime light levels, including responses to grey-scale spatial patterns. What is the optimal arrangement of photoreceptors in a trichromatic retina to achieve both spatial and spectral discriminations? This problem has occupied designers of imaging sensor chips for decades, and there are different engineering solutions, constrained by manufacturing processes and desired outcome. The proposed interdisciplinary project investigates this question in a biological imaging system: the living human eye.

Fundamental to addressing this question is the ability to map the human trichromatic mosaic *in vivo*. The first part of the project is to develop reliable tools to do this. The second part of the project will use empirical techniques to measure visual performance with stimuli delivered directly to the cone mosaic. The help understand the empirical results, computational modelling, using the Image System

Engineering Toolbox for Biology (ISETBIO), will be used to predict performance under known assumptions, which can then be compared to empirical performance.

The student will be jointly supervised across the departments of Experimental Psychology and Engineering Science, working with state-of-the-art facilities for advanced retinal imaging.

### **How to apply**

In addition to the submission of a completed application form and the application fee, the following materials are compulsory for all applications:

1. Three academic references
2. Transcript(s) of previous higher education
3. CV
4. Research Proposal: Your application should include a 1-page research proposal that outlines how your proposed research would examine the trade-offs in spatial and chromatic vision in a cone mosaic with different ratios of L and M cones.
5. The application form, all supporting materials required for the DPhil programme (including references) and payment must be submitted by the 21 June 2024. Further details, guidance notes and information about fees can be found here:  
<https://www.ox.ac.uk/admissions/graduate>.

### **Application details:**

In order to apply for the studentship, please do so via the University's official website:

<https://www.ox.ac.uk/admissions/graduate/courses/dphil-experimental-psychology#content-tab--6>

**Closing date for applications is: Friday 21 June**

### **About the University of Oxford**

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit [www.ox.ac.uk/about/organisation](http://www.ox.ac.uk/about/organisation).

### **Department of Experimental Psychology**

The Department of Experimental Psychology at Oxford was founded in 1898 and has a long and prestigious history and is fortunate to be home to a number of current world-leading research groups, and continues to be among the top-ranked Psychology departments worldwide. In the 2014 Research Excellence Framework (REF) Exercise the Psychology, Neuroscience and Psychiatry REF submission from Oxford was ranked as first in the UK. Departmental turnover for 19/20 was almost £17 million. Research in the Department is organised into 5 research groupings roughly equal in size: Behavioural Neuroscience / Cognition and Perception / Developmental Psychology / Social Psychology / Psychological and Brain Health.

In 2018 the core of the Department relocated to the Radcliffe Observatory Quarter where we now occupy two floors of New Radcliffe House and the Anna Watts Building. The Anna Watts building houses the developmental research centre and facilities for EEG, TMS, and tDCS, along with multiple laboratories with eye-movement recording equipment. The Oxford Centre for Anxiety Disorders and Trauma (OXCADAT) is located at The Old Rectory and we also have some research groups located in the Tinsley Building in the Science Area of the city. Experimental Psychology has good access to a wide variety of special populations including: mothers and babies, schools, older participants, acquired and developmental neuropsychological patients, and individuals with psychological problems.

Research in the Department is supported by an extensive range of laboratory and IT facilities. The Department has a wide portfolio of research grants from UK and international charities, Research Councils and government organizations, the EU Scientific Programme, NIHR, and industrial sources. Much of the work is collaborative with other Departments and often includes work in hospitals, schools and industrial settings both locally and further afield. Many researchers in the Department also have collaborative research programmes with leading institutions elsewhere in the UK, in Europe, North America, and Japan.

At the undergraduate level, the Department is the focus for lectures, classes, practicals, and research projects. It is a centre used by the undergraduates from all colleges for the Experimental Psychology (EP), Psychology, Philosophy and Linguistics (PPL), and Biomedical Science (BMS) courses. The Department provides lecture rooms, IT facilities and laboratories for experimental and project work.

The Department also hosts two Masters level courses. MSc in Psychological Research and MSc in Neuroscience:

For more information please visit: <http://www.psy.ox.ac.uk>.

The Department of Experimental Psychology is strongly committed to equality and valuing diversity and we operate a flexible working policy for all staff. The Department holds a departmental **Silver** Athena award to recognise advancement of gender equality: representation, progression and success for all.

## **Medical Sciences Division**

The Medical Sciences Division is an internationally recognized centre of excellence for biomedical and clinical research and teaching. We are the largest academic division in the University of Oxford.

World-leading programmes, housed in state-of-the-art facilities, cover the full range of scientific endeavour from the molecule to the population. With our NHS partners we also foster the highest possible standards in patient care.

For more information please visit: [www.medsci.ox.ac.uk](http://www.medsci.ox.ac.uk)