



**Industrial CASE Studentship Advertisement 2022-23**

**Supervisors names:** Dr Andrew Jones, Professor Philip Biggin, Steven Trim

**Department(s)/ Organisations:** Department of Biological and Medical Sciences, Oxford Brookes University; Department of Biochemistry, University of Oxford; Venomtech Ltd

**e-mail:** [a.jones@brookes.ac.uk](mailto:a.jones@brookes.ac.uk)

**Tel:** (01865) 483602

**Project Title:** Using spider venoms to develop novel, safer, insecticides for crop protection

**Brief description of project:**

For protecting crops, neonicotinoids have become the most widely used class of insecticides in the world. However, their use has been restricted in the European Union amidst fears that they are having adverse effects on pollinators such as the honey bee, *Apis mellifera*. This has resulted in the use of an older class of pesticides, pyrethroids, to which pests have become resistant. There is thus the need to develop novel and safer pest control agents that have higher selectivity for pests over beneficial species and which allow more effective resistance management strategies.

Venoms in natural predators of insects, such as those of spiders, contain a wealth of peptides with the potential to be developed into novel, environmentally safe biopesticides. The successful candidate will study the actions of venom components on ligand-gated ion channels (LGICs), such as GABA receptors, of the green peach aphid, *Myzus persicae* (a major pest of crops) and of the honey bee, *Apis mellifera* (an important pollinator of crops). LGICs are the targets of many effective insecticides and the aim is to determine features specific to aphid LGICs that can be exploited for the future development of insecticides that are highly selective towards pest species whilst sparing beneficial insects. The student will benefit from expertise at Oxford Brookes University, the University of Oxford and Venomtech Ltd, which is the UK's only commercial venom laboratory that have developed world leading techniques in venomous animal husbandry, venom extraction and biotechnological use of venom. The project will, therefore, provide opportunities for training in skills from several diverse disciplines including molecular biology, pharmacology, electrophysiology, neuronal cultures, peptide purification, modelling of protein structure and ligand-binding dynamics.

**Attributes of suitable applicants:**

Applicants are required to hold/or expect to obtain a UK Bachelor's Degree 2:1 or better (or overseas equivalent) in a Life Sciences degree, which includes the study of Molecular Biology.

**How to apply:**

Applicants should first contact the lead supervisor to discuss whether their research interests are a suitable fit for the project, then apply via this webpage

<https://www.brookes.ac.uk/bms/research/degrees/the-oxford-interdisciplinary-bioscience-doctoral-training-partnership/> . Please note that we are implementing measures to limit implicit



### Industrial CASE Studentship Advertisement 2022-23

bias in the application process and taking positive action to support students from groups that are under-represented in bioscience. Applicants therefore need to follow the instructions available on the following webpage when preparing an application: [Pilot assessment procedure: MPLS doctoral training courses | University of Oxford](#).

#### **Funding notes:**

This project is funded for four years by the Biotechnology and Biological Sciences Research Council UKRI-BBSRC. UKRI-BBSRC eligibility criteria apply (<https://www.ukri.org/files/funding/ukri-training-grant-terms-and-conditions-guidance-pdf/>). Successful students will receive a stipend of no less than the standard UKRI stipend rate, currently set at £15,609 per year.

*This project is supported through the Oxford Interdisciplinary Bioscience Doctoral Training Partnership (DTP) studentship programme. The student recruited to this project will join a cohort of students enrolled in the DTP's interdisciplinary training programme, and will participate in the training and networking opportunities available through the DTP. For further details, please visit [www.biodtp.ox.ac.uk](http://www.biodtp.ox.ac.uk). The DTP and its associated partner organisations aim to create a community that is innovative, inclusive and collaborative, in which everyone feels valued, respected, and supported, and we encourage applications from a diverse range of qualified applicants.*