



### Industrial CASE Studentship Advertisement – 2019-20

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**Project Title:** *Structural and functional studies of plant transporters involved in nutrient and glycan transport.*

**Brief description of project (no more than 500 words):** We have several projects that involve investigating the molecular basis of nutrient and glycan transport in plant cells. One project focuses on the proton coupled nitrate transporter, NRT1.1, which is responsible for nitrate transport in root cells. We determined the crystal structure of NRT1.1 and elucidated the mechanism of phosphor-regulation (Parker & Newstead, *Nature*, 2014). However, several important questions remained unanswered concerning the role of NRT1.1 as a receptor for external nitrate concentration and the mechanism through which the kinase CIPK23 and transcription factors interact to regulate intracellular signalling events. We will use a combination of X-ray crystallography, combined with single particle cryo-EM to address these questions.

Our second project is an iCASE award and involves the mechanism underlying glycan transport in plant cells. We are currently part of the BBSRC funded NIBB, Crossing Biological Membranes Network (CBMNet), and have partnered with several companies in Canada (<http://www.plantformcorp.com>) who are using plant based recombinant expression systems to manufacture glycan-based antibody therapeutics. We recently determined the crystal structure of the yeast nucleotide sugar transporter, Vrg4 (Parker & Newstead, *Nature*, 2017) and will follow up this work through the study of plant homologues. Our aim is to evaluate the role of plant nucleotide sugar transporters in regulating the availability of different nucleotide sugar donors to the glycosylation machinery in the ER and Golgi Lumen.

**Attributes of suitable applicants:** Applicants should have a good understanding of protein biochemistry, preferably some prior experience from summer placements, final year projects etc.

**Funding notes:** This project is funded for four years by the Biotechnology and Biological Sciences Research Council BBSRC. BBSRC eligibility criteria apply (<https://www.ukri.org/files/legacy/publications/rcuk-training-grant-guide-pdf/> Annexe 1). EU nationals who do not meet BBSRC residence criteria are encouraged to contact the programme administrator to check their eligibility for BBSRC funding before submitting a formal application. Successful students will receive a stipend of no less than the standard RCUK stipend rate, currently set at £14,777 per year, which will usually be supplemented by the industrial partner.

*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 be able to take full advantage of 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).*