

OXFORD INTERDISCIPLINARY BIOSCIENCE – Doctoral Training Partnership

Industrial CASE Studentship Advertisement – 2023 Entry

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Project Title:	Transient expression of sustainable food proteins in alternative plant species.

Brief description of project: The current food and medicine industry heavily relies on animal proteins that are produced with an unsustainably high carbon footprint. A sustainable alternative is presented by plant-based production systems, as plants harvest light energy directly and provides an eukaryotic expression platform that is free of animal pathogens. The infiltration of *Agrobacterium tumefaciens* bacteria into leaves of the wild tobacco relative *Nicotiana benthamiana* (agroinfiltration) is currently routinely used to transiently express proteins for research and medical use. To increase public acceptance of agroinfiltration-based products, this project will explore the transient expression in plant species other than tobacco relatives. The first objective is to screen various plant species by agroinfiltration with different strains for efficient expression of fluorescent marker proteins. Second, we will further optimise expression using silencing inhibitors, effectors and optimized codon usage. Third, the production will be evaluated with sustainable food proteins at commercial scale in collaboration with Kyomei, the commercial partner in this iCASE project. This project will be embedded within a closely collaborating team of researchers working on Molecular Pharming, and will take advantage of extensive knowledge on plant-pathogen interactions within the laboratory.

Attributes of suitable applicants: We seek a team worker with experience in protein analysis and molecular cloning, who can grow plants and is not afraid of larger experiments.

Funding notes:

This project is funded for four years by the Biotechnology and Biological Sciences Research Council UKRI-BBSRC. UKRI-BBSRC eligibility criteria apply (<u>https://www.ukri.org/files/funding/ukri-training-grant-terms-and-conditions-guidance-pdf/</u>). Successful students will receive a stipend of no less than the standard UKRI stipend rate, currently set at £17,668 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



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<u>www.biodtp.ox.ac.uk</u>. 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.