



Nottingham BBSRC DTP CASE Project

**Project Title:**

[Using virus-like particles to understand the key success criteria in dsRNA delivery for crop protection](#)

Research Cluster:

Technologies for sustainable protein synthesis (Biotechnology for Sustainable Growth)

School:

School of Bioscience

Partner Organisation:

[Croda International Plc](#)

Project Description:

In 2024, the agricultural industry witnessed the introduction of some of the first sprayable RNA-based crop protection products. These innovative actives offer the promise of highly specific protection against significant pests while ensuring the safety of humans and other species.

However, as with any new active ingredient, the optimal delivery to the target species is crucial for success. The packaging, stabilization, dispersion, application, and targeting of the RNA all play critical roles in determining the effectiveness of these products. To achieve this, a variety of high-tech options might be considered.

This CASE PhD Studentship aims to test hypotheses associated with double-stranded RNA (dsRNA) delivery using plant-made virus-like particles (VLPs). The PhD candidate will explore hypotheses associated with delivery by creating a library of modified viral capsids containing dsRNA. These capsids will differ in their fundamental properties, such as dsRNA loadings, surface charge and affinity with various targets. The overall aim will be to assigning shifts in efficacy associated with changes in design.

This project is at the cutting edge of research into VLP and RNA biotechnology, and the student will have the opportunity to make an impact on this field of research both in an academic setting as well as in the commercial sector. The candidate will work primarily in Dr Hadrien Peyret's research laboratory at the University of Nottingham School of Biosciences based on the Sutton Bonnington campus. This laboratory specialises in plant molecular farming, the set of technologies which allow plants to be used as green biofactories for the production of medically or technologically valuable proteins and biologics. The School of Bioscience is particularly well resourced with extensive

glasshouse infrastructure and scientific equipment for the molecular biology, biochemistry, and analytical work that the candidate will carry out.

[Croda](#), the commercial partner of this project which will host the candidate for an industrial placement, is an established company specialising in the formulation of agrichemical and crop protection products. Thanks to them, the candidate will gain experience in product formulation and characterisation, as well as commercial product development in general.

The University of Nottingham is committed to supporting its PhD students of all backgrounds, and the candidate will be part of a cohort of PhD students who will undergo common training and networking activities, with extensive pastoral and training support available. The Nottingham BBSRC Doctoral Training Partnership recognises and prioritises its responsibility to operate in a way which creates equality of opportunity for all of our applicants and students, supporting the recruitment of a [diverse student cohort and running an inclusive programme](#)

Lead Supervisor:

[Hadrien Peyret](#)

Please email the lead supervisor to find out more about this project.

Terms & Conditions:

Home and international students are welcome to apply for this opportunity. Funding is available for four years from October 2025. The award covers tuition fee (£4,712) at the home rate plus an annual stipend which was (£19,273) for 2024. This is set by the Research Councils.

Please note that successful international candidates will be put forward for a University Fees Difference Scholarship to cover the difference between the home and international fee.

<https://www.nottingham.ac.uk/bbdtpp/apply/apply-online.aspx>

Closing Date:

12 noon (UK time) 31 January 2025