

PhD Studentship: Unravelling the Antigenic and Pathogenic Signatures of UK Reassortant Infectious Bursal Disease Virus.



Audrey Rolls PhD Studentship in Animal Health

Project Ref: 2026/07

Anticipated Start Date: October 2026 **Duration:** 3.5 years full-time

Closing date to apply: 15.04.26

Eligibility:

- This studentship is open to science graduates with, or who anticipate obtaining, at least a 2:1 or equivalent in a relevant biological subject in an undergraduate degree, or with a Masters degree - subject to university regulations. Other first degrees, e.g. veterinary science, will be considered. You should be looking for a challenging, interdisciplinary research training environment and have an active interest in the control of infectious diseases.
- This is a 3.5 year fully funded studentship open to UK nationals. International candidates may apply, however funding for this studentship includes university tuition fees at the Home rate only.
- Students without English as a first language must provide evidence that they meet the English language requirement, e.g. with an average IELTS score of 7.0, with no lower than 7.0 in listening/reading and no lower than 6.5 in speaking/writing.

Supervision:

Principal Supervisors: [Dr Ahmed Ibrahim](#) (The Pirbright Institute), [Dr Kate Sutton](#) (The Roslin Institute, University of Edinburgh)

Co-Supervisors: [Dr Wilhelm Gerner](#) (The Pirbright Institute), [Jennifer Simpson](#) (The Pirbright Institute), [Dr Helena Maier](#) (The Pirbright Institute)

Research Group: [Infectious Bursal Disease Virus](#)

Project Details:

Infectious bursal disease virus (IBDV) is the main immunosuppressive virus affecting young chickens. The virus specifically targets and destroys developing B lymphocytes in the bursa of Fabricius, a key immune organ in birds that is critical for B-cell development. This leads to significant reduction of the ability of chickens to produce antibodies. Subsequently, lowering the effectiveness of vaccines against other viruses and increasing vulnerability to secondary bacterial and viral infections.

The reassortant genotype (A3B1) of IBDV become the predominant circulating virus even in vaccinated farms across the UK and Europe and has also been detected in Asia and Africa. The virus formed from a combination of genetic material from very virulent and vaccine-like viruses. Remarkably, the same reassortant genotype has two distinct forms: one that causes severe disease with high mortality, and the second that spreads silently without obvious clinical signs. Despite their different clinical pathogenicity, both forms induce severe B lymphocyte apoptosis and bursal atrophy and subsequently immunosuppression. Understanding how these closely related viruses behave so differently, and how they evade existing vaccines, represents a critical scientific and industry challenge.

This PhD project will explore how genetic changes in the virus influence pathogenicity, antigenicity, and immune suppression. The student will generate a panel of engineered viruses using reverse genetics. These viruses will be studied in ex vivo avian immune cells and lymphoid tissue explants, with selected viruses further examined in controlled infection studies to link viral genetics with disease outcomes, that can enable development of Cell Culture Adapted Vaccines.

This project will provide the student with training in virology techniques, molecular biology, primary immune cell culture, lymphoid tissue explants, flow cytometry, and advanced imaging techniques. The project will be based at

The Pirbright Institute, with joint supervision from the University of Edinburgh and collaboration with the WOAHI Reference Laboratory for IBDV.

References for Background Reading:

1. Legnardi, M., et al., Infectious bursal disease virus in Western Europe: The rise of reassortant strains as the dominant field threat. *Avian Pathology*, 2023. 52(1): p. 25-35.
2. Piķuła, A., K. Śmietanka, and L.J. Perez, Emergence and expansion of novel pathogenic reassortant strains of infectious bursal disease virus causing acute outbreaks of the disease in Europe. *Transboundary and Emerging Diseases*, 2020. 67(4): p. 1739-1744.
3. Qi, X., et al., An improved method for infectious bursal disease virus rescue using RNA polymerase II system. *J Virol Methods*, 2007. 142(1-2): p. 81-8.
4. Cubas-Gaona, L.L., et al., Ex vivo rescue of recombinant very virulent IBDV using a RNA polymerase II driven system and primary chicken bursal cells. *Scientific Reports*, 2020. 10(1): p. 13298.
5. Luo, J., et al., Surface IgM on DT40 cells may be a component of the putative receptor complex responsible for the binding of infectious bursal disease virus. *Avian Pathology*, 2010. 39(5): p. 359-365.
6. Cubas-Gaona, L.L., et al., High antigenic diversity of serotype 1 infectious bursal disease virus revealed by antigenic cartography. *Virus Res*, 2023. 323: p. 198999.

Registration, Training and Funding:

This is a Pirbright Institute/Audrey Rolls legacy/University of Edinburgh fully funded studentship. The studentship covers stipend and Home rated university tuition fees. International students will attract tuition fees at the Overseas rate and must show evidence of their ability to cover the difference between Home fees and Overseas fees for the duration of study.

The student will be based primarily at The Pirbright Institute and registered with the University of Edinburgh. The student will visit the university to meet with their supervisors and undertake training or complete specific project tasks as required. Eligible students will receive a UKRI-aligned stipend (£21,805 for 2026/27) plus a cost of living allowance of £2,200 per annum. Home rated university tuition fees will be paid. Highly subsidised Pirbright Institute student housing will be offered. A full range of research and transferrable skills training will be made available to the student as appropriate.

Applications:

[How to Apply](#): Closing date: **15.04.26**

Essential documents:

- Application Form
- CV
- Two references sent directly by your referees

Please email your application to studentship@pirbright.ac.uk by the closing date.