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**Project Ref:** 2017 18 MI/PG - Edinburgh

**Closing Date:** 23 June 2017

**Anticipated Start Date:** August/September 2017

**Duration:** 3.5 years full-time

**Title:** Enhancing resistance in birds against avian influenza

**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 their undergraduate degree, or 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 fully-funded studentship only open to UK students and eligible EU students who qualify for home-rated fees, in line with BBSRC criteria:  
[http://www.bbsrc.ac.uk/web/FILES/Guidelines/studentship\\_eligibility.pdf](http://www.bbsrc.ac.uk/web/FILES/Guidelines/studentship_eligibility.pdf)
- Students without English as a first language must also provide evidence that they meet the English language requirement, e.g. with an IELTS score of 7.0 and no less than 6.5 in any of the subsections.

**Supervision:**

Principal Supervisors: Dr Munir Iqbal, The Pirbright Institute

Professor Paul Digard, The Roslin Institute, University of Edinburgh

**Project Details:**

Avian influenza viruses (AIV) of the H5 and H9 subtypes cause severe loss to commercial and backyard poultry production. This has serious implications for food security and sustainability as well as the potential zoonotic risk to humans and other livestock populations. Effective control of these viruses in poultry is complex with detection, culling, movement restrictions, and vaccination all being used. Despite these controls AIV has become enzootic in many countries. Vaccines are at the forefront of attempts to reduce the devastating impacts of AIV in poultry. However, increasingly emergent of antigenically diversified AIV are able to escape vaccines induced immunity. Therefore, there is an urgent need for better understanding the virus antigenicity determinants enabling development of more effective vaccines and vaccination strategies.

This project will utilise advanced molecular virology and immunology techniques to investigate the antigenic diversity of H5 and H9 viruses and utilise vectored immunoprophylaxis vaccination methods to develop novel vaccines providing instant protection to vaccinated birds by inducing passive immunity. In parallel, the project will produce transgenic chickens that are resistant to AIV disease. Availability of these novel, highly protective and cost-effective disease control tools and chicken breeds should minimise the impact of AIV on poultry and offer substantial economic, public health, environmental, and social benefits at a global scale.

**References for Background Reading:**

- Peacock T, Reddy K, James J, Adamiak B, Barclay W, Shelton H & Iqbal M (2016). Antigenic mapping of an H9N2 avian influenza virus reveals two discrete antigenic sites and a novel mechanism of immune escape. *Scientific Reports* 5: 18745. [doi: 10.1038/srep18745](https://doi.org/10.1038/srep18745).

- Sanders JW and Ponzio TA (2017). Vectored immunoprophylaxis: an emerging adjunct to traditional vaccination. *Tropical Diseases, Travel Medicine and Vaccines* (2017) 3:3 [doi: 10.1186/s40794-017-0046-0](https://doi.org/10.1186/s40794-017-0046-0)
- Macdonald J, Taylor L, Sherman A, Kawakami K, Takahashi Y, Sang HM, McGrew MJ.( 2012). Efficient genetic modification and germ-line transmission of primordial germ cells using piggyBac and Tol2 transposons. *PNAS* [E1466–E1472, doi: 10.1073/pnas.1118715109](https://doi.org/10.1073/pnas.1118715109)

### Training and Funding:

This is a fully funded collaborative project between The Pirbright Institute and The University of Edinburgh. The student will be based at The Pirbright Institute and registered with the University of Edinburgh, with visits to the Roslin Institute to meet with their supervisor and undertake training as required. Eligible students will receive a minimum annual stipend of £14,553 and university registration fees will be paid. A full range of research and transferrable skills training will be made available to the student as appropriate.

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Your application will only be considered if we have received the following documents:

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

These documents should be sent to [studentship@pirbright.ac.uk](mailto:studentship@pirbright.ac.uk)

Further information regarding the partner institutions can be found at:



The Pirbright Institute



THE UNIVERSITY  
of EDINBURGH

The University of Edinburgh



The Roslin Institute