

To Apply:

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

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

Project Ref: 2017 06 SG/JH - Liverpool

Anticipated Start Date: October 2017

Duration: 4 years full-time

Title: Identification and functional characterisation of host proteins that interact with non-structural proteins of porcine reproductive and respiratory syndrome virus (PRRSV)

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.
- 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: Simon Graham, The Pirbright Institute; Julian Hiscox, University of Liverpool

Co-Supervisor: Julian Seago, The Pirbright Institute

Project Details:

Porcine reproductive and respiratory syndrome (PRRS) is the most important infectious disease affecting the global pig industry. PRRS is a major threat to animal welfare and food security. In the USA alone, losses are estimated to exceed US\$600 million *per annum*. The emergence of highly pathogenic strains and the failure of current live attenuated PRRS virus (PRRSV) vaccines to provide broad cross-protection pose significant challenges to disease control world-wide and improved vaccines are urgently required. Key to the success of the PRRSV is its ability to evade the host immune responses. This involves specialised proteins encoded by the virus targeting specific host molecules involved in defence pathways. An improved understanding of the mechanisms used by the virus to evade host immune responses will contribute to the production of improved live attenuated vaccines with defined phenotypes. To facilitate this we propose to better characterise the functions of non-structural proteins made by the virus through identification of the host proteins with which they interact. We plan to use state-of-the-art techniques, such as quantitative label-free proteomics, that allow us to map the interactions viral proteins can have with the host, and work out why these are important.

References for Background Reading:

1. Xiao Y.... and Hiscox JA. 2016. Characterization of the Interactome of the Porcine Reproductive and Respiratory Syndrome Virus Nonstructural Protein 2 Reveals the Hyper Variable Region as a Binding Platform for Association with 14-3-3 Proteins. *J Proteome Res.* 15:1388-401.
2. Fang Y and Snijder EJ. 2010. The PRRSV replicase: exploring the multifunctionality of an intriguing set of nonstructural proteins. *Virus Res.* 154:61–76.
3. Rascón-Castelo E et al 2015. Immunological features of the non-structural proteins of porcine reproductive and respiratory syndrome virus. *Viruses.* 7:873-86.

Registration, Training and Funding:

This is a Pirbright Institute/University of Liverpool fully funded project. The student will be based at The Pirbright Institute and registered with the University of Liverpool, with visits to the university 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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Further information regarding the partner institutions can be found at:



<http://www.pirbright.ac.uk>

<https://www.liverpool.ac.uk/>