

PhD Studentship: Rift Valley fever virus genome variability and evolution as a means of predicting outbreaks and emergence

Closing date: 03.04.2019
Project Ref: 2019-17 ID/KM
Anticipated Start Date: October 2019
Duration: 3.5 years full-time

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 [RCUK Residential Guidelines for Research Council Studentships](#).
- Students without English as a first language must 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 Isabelle Dietrich (The Pirbright Institute), Dr Kevin Maringer (University of Surrey)
Co-Supervisors: Dr Simon Gubbins (The Pirbright Institute), Dr Dan Horton (University of Surrey)

Project Details:

A PhD studentship co-funded by the Pirbright Institute and the University of Surrey is available to highly motivated students with a keen interest in emerging vector-borne diseases and molecular virology. This exciting project will investigate the spatial-temporal evolution of Rift Valley fever virus in its mosquito vector and the effect of such evolution on viral fitness and pathogenicity.

Rift Valley fever virus (RVFV) is a mosquito-transmitted pathogen endemic in Africa and the Arabian Peninsula. It predominantly infects livestock, where it causes abortions, fevers and deaths. Human infections also frequently occur which are sometimes fatal. Gaining a detailed understanding of how RVFV genomes evolve in the field will allow us to better predict outbreaks and their severity. In this project we will thus investigate the ability of RVFV to evolve in mosquito hosts and identify immunological drivers of this evolution in different mosquito tissues over the course of an infection. We will further assess the fitness and pathogenicity of viral genomes arising in mosquitoes and mammalian cells. We will use the obtained experimental data to model the potential emergence and spread of RVFV viral variants.

The candidate will be trained in molecular virology techniques under Biosafety Level 2 and 3 conditions, mosquito rearing, infections and manipulations as well as bioinformatics and mathematical modelling approaches. The candidate will have the opportunity to develop aspects of the project further, depending on interests. The candidate is further encouraged to give seminars, draft research papers for peer review and publication and to participate in other activities at the Pirbright Institute and the University of Surrey.

References for Background Reading:

1. Ikegami, T. (2012) Molecular biology and genetic diversity of Rift Valley fever virus. *Antiviral Res.* 95(3): 293-310.
2. Grubaugh, N.D. et al. (2016) Genetic drift during systemic arbovirus infection of mosquito vectors leads to decreased relative fitness during host switching. *Cell Host & Microbe* 19: 481-492.

Registration, Training and Funding:

This is a Pirbright Institute/University of Surrey fully funded project. The student will be mainly based at The Pirbright Institute and registered with the University of Surrey, with regular visits to the university to undertake research and training as required, and to meet with their supervisor. Eligible students will receive a

minimum annual stipend of £15,009 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.

Applications:

Details of how to apply can be found here: [How to apply](#)

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 noted above.