PhD Studentship: Forecasting the next panzootic foot-and-mouth disease lineage: informing virus fitness from in vitro studies and genomic data

Closing date: 04.08.19
Project Ref: 2019-16 DK/DH
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 open to UK students and eligible EU students who qualify for home-rated fees**, in line with 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 Don King (The Pirbright Institute), Dr Dan Horton (University of Surrey)
Co-Supervisors: Dr Lidia Lasecka, Dr Andrew Shaw, Dr Toby Tuthill (The Pirbright Institute)

Project Details:

We seek a highly motivated student with the enthusiasm and drive to pursue an engaging question in the field of virus emergence and epidemiology. Foot and mouth disease virus (FMDV) causes a highly contagious disease of cloven hooved livestock with potentially devastating economic consequences. Whilst the different 'serotypes' of FMDV are highly variable, only a relatively small number of viral lineages successfully spread to have distributions covering multiple continents (attaining 'panzootic' status). This project aims to address the question of what drives a FMDV strain to become panzootic and supplant the existing strain(s). The ability to forecast whether a novel lineage is likely to become panzootic would profoundly improve our ability to prepare for and respond to outbreaks where multiple strains are circulating.

This project will take advantage of The Pirbright Institute's unparalleled collection of FMD viruses and sequence data to derive genotypic signatures of panzootic FMDV strains. As part of the project you will generate complete genomes of multiple co-circulating panzootic and non-panzootic strains. You will then use a comparative approach to analyse the complete genomes to look for regions that correlate with panzootic potential. These genomic analyses will in turn be complemented by you undertaking phenotypic characterisation of the viruses using classical laboratory and molecular virology techniques *in vitro*. Different viruses will be assessed according to their behaviour in the face of varying evolutionary pressures, for example host species or different levels of pre-existing immunity, and then assessing how the results relate to the observations made in the bioinformatics analyses.

You will have a rare opportunity to develop skills and to undertake laboratory work with live FMD virus in the high containment facilities based at the Pirbright Institute. The successful candidate will receive training in bioinformatics as well as a complete suite of classical and molecular virological methods which will be used throughout the project. This project represents an opportunity to answer a fundamental question in virology with a directly applicable outcome whilst at the same time gaining cutting edge skills and experience. The successful candidate will have excellent organisational, written and oral communication skills and be willing and able to show initiative in undertaking the proposed project.

Further information: Please contact Dr Don King (Donald.king@pirbright.ac.uk) or Dr Dan Horton (d.horton@surrey.ac.uk) for informal discussions regarding the project.

Registration, Training and Funding:

This is a Pirbright Institute/University of Surrey fully funded project. The student will benefit from affiliation with both institutions, and will be based at The Pirbright Institute and registered with the University of Surrey, with regular travel to the university to meet with their supervisor and undertake training and attend seminars and laboratory meetings as required. 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.