



Industrial CASE Studentship Advertisement – 2020-21

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Departments/Organisations:

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Project Title: African swine fever virus multigene family interferon inhibitory proteins: Functions and application to vaccine development.

Brief description of project:

African swine fever (ASF) is one of the most devastating swine diseases and has no available vaccine. Development of gene-deleted live attenuated vaccines is recognised to be the fastest route to vaccine development. This project will advance this approach through understanding the role of ASFV genes that inhibit host responses and deleting these from the genome to construct safe and effective ASFV vaccines. ASFV is a large DNA virus and codes for 150 to 167 genes. Several of the proteins encoded by multigene families (MGF) 360 and 505 are known to inhibit the host type I interferon response. Deletion of multiple copies of these MGF 360 and 505 genes can result in varying levels of attenuation of virulent ASFV. By constructing overlapping deletions of MGF 360 and 505 genes from the genome of virulent Georgia genotype II virus, we identified two of the MGF genes that are most important for virus attenuation.

The aim of this project is to further investigate how the proteins coded for by these MGF genes function to inhibit type I interferon induction and determine if they may also act to inhibit interferon responses or resistance factors and other host pathways. The project will advance the development of an effective vaccine against ASFV and establish the suitability for vaccine manufacture.

The student will be based at The Pirbright Institute in Surrey in the African swine fever virus group. The project will provide training in virology (including working at high containment SAPO4 level), molecular and cellular biology and immunology with special attention to the cells and pathways that initiate immune responses following infection or vaccination. The student will spend 3-6 months in the University Supervisor lab at the Jenner Institute. Here they will gain a broader knowledge in vaccinology and the use of virus vectors to express and analyse protein functions. The University of Oxford is committed to developing the transferable and research skillsets of all research students. Training involves some compulsory modules and also courses that cover topics such as research, communication, teaching and career development. A 12 week placement will be carried out at Zoetis, a world leader in production of veterinary vaccines. Zoetis have high containment facilities at their site in Olot (Spain) which will enable the student to gain



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experience in laboratory working in a commercial environment including procedures for scale up of cell and virus culture. The student will also have the opportunity to gain experience in other areas of the company which may include preparation of the documentation for vaccine registration or sales and marketing.

Attributes of suitable applicants:

The successful candidate will have a degree in a relevant biological science and an interest in virology and vaccine development. Relevant laboratory experience is desirable. The student must be willing to work in the high containment SAPO 4 laboratories at Pirbright.

Funding notes:

This project is funded for four years by the Biotechnology and Biological Sciences Research Council BBSRC. BBSRC eligibility criteria apply (<https://www.ukri.org/files/legacy/publications/rcuk-training-grant-guide-pdf/> Annexe 1). EU nationals who do not meet BBSRC residence criteria are encouraged to contact the programme administrator to check their eligibility for BBSRC funding before submitting a formal application. Successful students will receive a stipend of no less than the standard RCUK stipend rate, currently set at £15,009 per year, which will usually be supplemented by the industrial partner.

This project is supported through the Oxford Interdisciplinary Bioscience Doctoral Training Partnership (DTP) studentship programme. The student recruited to this project will join a cohort of students enrolled in the DTP's interdisciplinary training programme, and will be able to take full advantage of the training and networking opportunities available through the DTP. For further, details please visit www.biodtp.ox.ac.uk.