

PhD Studentship: The role of TGF β on modulation of immune responses in Marek's disease



Project Ref: 2021/01/SB

Anticipated Start Date: April 2021 **Duration:** 3.5 years full-time

Closing date to apply: 25.01.21

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 average IELTS score of 7.0, with no lower than 7.0 in listening/reading and no lower than 6.5 in speaking/writing.

Supervision:

Principal Supervisors: Dr Shahriar Behboudi (The Pirbright Institute), Dr Natalie Riddell (University of Surrey)

Co-Supervisors: Dr Nitin Kamble (The Pirbright Institute)

Project Details:

Regulatory T cells suppress many different immune cells and thus they are involved in immune modulation to inhibit inflammatory responses. Some pathogens activate expansion of regulatory T cells to escape immune control, however the mechanism involved in the induction and expansion of regulatory T cells by pathogens is not understood.

Marek's disease virus causes a lymphoproliferative disease in chickens and causes transformation of lymphocytes. Our group has shown that infection with Marek's disease virus induces expansion of novel regulatory T cells in the infected chickens, and this may explain immunosuppression observed in these birds (Gurung *et al. PLoS Pathogen* 2017). We have also recently shown that Marek's disease virus activates metabolic changes in the infected cells (Boodhoo *et al. Journal of Virology* 2019 and Boodhoo *et al. Journal of Virology* January 2020, Boodhoo *et al. Journal of Virology* September 2020). The studentship will investigate the mechanism involved in induction and activation of regulatory T cells by the virus and determine the role of metabolites produced by the infected cells in induction of regulatory T cells.

The student will join a successful, motivated multidisciplinary team with expertise in cellular and molecular immunology, virology and metabolism. A combination of cellular and molecular immunology as well as classical virology techniques including flow cytometry, confocal microscopy, metabolic analysis, molecular biology and gene silencing will be utilised in this project.

References for Background Reading:

1. Boodhoo N, Gurung A, Sharif S, Behboudi S. Marek's disease in chickens; a review with focus on immunology. *Veterinary Research*, 2016 November 28; 47(1);119.
2. Gurung A, Kamble N, Kaufer B, Pathan A, Shahriar Behboudi. Association of Marek's Disease induced immunosuppression with activation of a novel regulatory T cells in chickens, *PLoS Pathogens*, 2017, 13 (12), e1006745.
3. Boodhoo N, Kamble N, Kaufer BB, Behboudi S. Replication of Marek's disease virus is dependent on de novo synthesis of fatty acid and Prostaglandin E2. *J Virol*. 2019 Jun 14;93(13).
4. Boodhoo N, Kamble N, Sharif S, Behboudi S. Glutaminolysis and Glycolysis are essential for optimal replication of Marek's disease virus. *J Virol*. 2020 Jan 31;94(4).
5. Boodhoo N, Kamble N, Behboudi S. De Novo Cholesterol Biosynthesis and Its Trafficking in LAMP-1 Positive Vesicles Are Involved in Replication and Spread of Marek's Disease Virus, *J Virol*. 2020 Sep. *In press*.

Registration, Training and Funding:

This is a Pirbright Institute/University of Surrey fully funded project. The student will be based primarily at The Pirbright Institute and registered with the University of Surrey. The student will visit the university to meet with their supervisors and undertake training or complete specific project tasks as required. Eligible students will receive a minimum annual stipend of £15,285 plus a cost of living top-up allowance of £2,200 per annum. 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:

[How to Apply](#): closing date 25.01.21.

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.