

## College PhD Studentship in Microbial Science Research & Molecular Cell Biology

**Studentship Number:** BBSRC/10/03

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Department of Infection, Immunity & Inflammation &

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**Host Department:** Department Infection, Immunity & Inflammation

University of Leicester

**Project Title:** Ser/Thr protein kinases of *Burkholderia pseudomallei*

### **Project Description:**

*Burkholderia pseudomallei* is a tropical bacterial pathogen causing a serious invasive disease called melioidosis. It possesses a plethora of virulence factors that are regulated in a highly complex ways. Despite a substantial research effort during the past few years, our understanding virulence factors of *B. pseudomallei* and their regulation is far from complete. There is no or only a very limited knowledge on the entire families of proteins that, by analogy with other organisms, could play important roles in *B. pseudomallei* pathogenesis. One of such protein families is a family of Ser/Thr protein kinases. Protein kinases play key role in intracellular signalling pathways in both prokaryotes and eukaryotes. Moreover, several bacterial pathogens were shown to secrete protein kinases that could be delivered into host cells to obstruct cell signalling pathways for the benefit of pathogens. *B. pseudomallei* possesses at least 2 potential Ser/Thr protein kinases.

The **aim** of this project is to analyse repertoire and functions of Ser/Thr protein kinases produced by *B. pseudomallei* in order to understand their roles in *B. pseudomallei* virulence and regulation of cellular processes.

This is a collaborative project between two groups active in the Molecular microbiology and Biochemistry fields, with opportunities for collaboration with other researchers in the UK and abroad. The project will provide a varied and thorough research training in molecular microbiology and protein biochemistry.

**Eligibility criteria:** this studentship can only be offered to a candidate who satisfy UK residency requirements of the BBSRC: a UK national, or a permanent UK resident, or an EU national who has been resident in the UK for the three years immediately preceding the take up of the award (for more detail see [http://www.bbsrc.ac.uk/funding/studentships/studentship\\_eligibility.pdf](http://www.bbsrc.ac.uk/funding/studentships/studentship_eligibility.pdf))

Relevant publications: (1-3)

1. **Galyov, E. E., S. Hakansson, A. Forsberg, and H. Wolfwatz.** 1993. A secreted protein kinase of *Yersinia pseudotuberculosis* is an indispensable virulence determinant. *Nature* **361**:730-732.
2. **O'Hare, H. M., R. Duran, C. Cervenansky, M. Bellinzoni, A. M. Wehenkel, O. Pritsch, G. Obal, J. Baumgartner, J. Vialaret, K. Johnsson, and P. M. Alzari.** 2008. Regulation of glutamate metabolism by protein kinases in mycobacteria. *Molecular Microbiology* **70**:1408-1423.
3. **Stevens, M. P., J. M. Stevens, R. L. Jeng, L. A. Taylor, M. W. Wood, P. Hawes, P. Monaghan, M. D. Welch, and E. E. Galyov.** 2005. Identification of a bacterial factor required for actin-based motility of *Burkholderia pseudomallei*. *Molecular Microbiology* **56**:40-53.