College PhD Studentship in Microbial Science Research

Studentship Number: BBSRC/10/04

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Project Title: Mycobacterial resuscitation-promoting factors (Rpfs): roles and mechanisms in infected macrophages

Project Description

Nearly 2 million people die every year from tuberculosis and one third of the entire world population carries the infection in a quiescent form known as latency. The mycobacterial cells associated with latent tuberculosis are believed to be in a special non-replicating state known as dormancy. The precise mechanisms underlying the transition to the dormant state and in particular resuscitation remain unknown. Resuscitation-promoting factors are a family of secreted muralytic enzymes produced, which have been implicated in many processes, including resuscitation of dormant cells, intracellular growth and modulation of the cytokine response of infected macrophages.

The main goal of the project is to investigate the functions of individual Rpf proteins from the model microorganism Mycobacterium marinum in infected macrophages. Experimental approaches will include the expression and purification of recombinant Rpfs, generation of specific antibodies, localization studies; generation of deletion mutants and analysis of their phenotype in vitro and in vivo, and characterisation of potential protein-protein interactions of Rpf proteins with other secreted proteins. Expression patterns of individual Rpfs will be studied at both the RNA (qRT-PCR) and protein (immunoblot and fluorescence microscopy) levels.

Application deadline: March 10th 2010.

Relevant publications: