II. Abstract

This research proposes to investigate the role of the Type Six Secretion System (T6SS) in altering *Bordetella bronchiseptica* intracellular survival during infection *in vivo*. We will investigate the mechanism of survival of a *Bordetella bronchiseptica* mutant lacking a functional T6SS (RB50ΔT6SS) in systemic organs and will determine whether loss of the T6SS enables survival intracellularly in antigen presenting cells at the site of infection followed by trafficking to systemic organs and proliferation systemically. Additionally, since infection with RB50ΔT6SS causes earlier host death than infection with wild-type RB50, we will determine the mechanism of death in these mice. If the less virulent mutant proves better able to traffic to systemic organs via phagocytes and survive in this intracellular niche as compared to the more virulent wild-type bacteria, this model will strengthen the hypothesis that virulence-phase shift enables higher levels of intracellular *B. bronchiseptica* survival.