

II. ABSTRACT

B. pertussis is a highly infectious human respiratory pathogen and an etiological agent of the disease whooping cough. Despite widespread vaccination, whooping cough remains endemic in all populations and continues to cause periodic outbreaks of disease. Studies to better understand the mechanisms of immunity against this re-emerging pathogen are crucial to the development of more effective vaccines. Therefore, we propose to investigate the role of Interleukin-2 inducible T cell kinase (Itk) in the development of effective immune responses against *B. pertussis*. Itk is a Tec family non-receptor tyrosine kinase expressed on T cells and mast cells that is known to be important for T cell signaling. Since our preliminary experiments show that Itk is required for efficient clearance of *B. pertussis* from the respiratory tract, we propose to examine aspects of innate and adaptive immunity that may be defective in the absence of Itk. In *Aim I*, we propose to define various aspects of innate immunity, particularly inflammatory responses, in the absence of Itk expression. Lastly, in *Aim II*, we will examine T cell priming and antibody production induced by *B. pertussis* infection in the absence of Itk.