# Abstract

Most of the members of the Gram-negative genus *Bordetella* cause severe infections of the respiratory tract in their hosts. *B. pertussis* and specific lineages of *B. parapertussis* infect humans and cause the disease known as whooping cough, a highly contagious respiratory disease that is currently on the rise even in highly vaccinated populations. Therefore, a more detailed understanding of the *B. pertussis* interactions with the host is crucial. *B. pertussis* produces a great variety of virulence factors, majority of which is regulated by the two-component BvgAS system. These factors assist the pathogen in the colonization of the host and evasion of the host immune system. The studies on host-pathogen interactions use both *in vitro* and *in vivo* infection models, which complement each other appropriately. Recently, it was demonstrated that *B. pertussis* escape killing and persists in macrophages, suggesting that *B. pertussis* can be considered as a facultative intracellular pathogen. This ability may allow the pathogen cells to persist within the host and potentially spread to the new host. The aim of this bachelor thesis was to summarize the knowledge on the host-pathogen interactions between *B. pertussis* and its host with focus on *in vitro* and *in vivo* infection models. The attention is paid especially to the adaptation of the pathogen during infection and to the requirement of virulence factors for different phases of infection.



**Key words:** *Bordetella pertussis*, virulence factors, Bvg, infectious models, intracellular pathogen, immune response