Public Abstract
First Name:Carla
Middle Name:Jean
Last Name:Bermudez
Adviser's First Name:Roger
Adviser's Last Name:Stich
Co-Adviser's First Name:Daniel
Co-Adviser's Last Name:Hassett
Graduation Term:FS 2013
Department:Microbiology- Medicine
Degree:MS
Title:FIRST CONTACT: POTENTIAL CONSEQUENCES OF EXPOSURE OF MACROPHAGE-LIKE CELLS TO DIVERGENT BACTERIA

The innate immune system must react to a wide variety of foreign stimuli, only a relatively small proportion of which may be classified as harmful. The goal of this thesis was to investigate interactions between macrophages and divergent bacteria with a broad range of adaptation to these mammalian cells that serve a central role at the interface of the innate and adaptive immune responses. The first study aimed to model innate macrophage responses to inactivated Bacillus spores, a proposed vaccine platform. This was done through cell culture of the macrophage-like cell line, J774, exposed to UV-irradiated Bacillus thuringiensis spores and molecules with known pathogen associated molecular patterns (PAMPs). Results indicated that B. thuringiensis spores activated J774 cells. J774 cells secreted cytokines TNF-?, IL-6 and IL-10 in response to these spores. IL-1?, a pro-inflammatory cytokine, was only detected in J774 culture supernatant after exposure to viable Bacillus spores, or in the presence of UV-irradiated spores and an adjunct PAMP-containing molecule. The second study in this thesis concerned the interaction of parasitic bacteria with different mammalian host cell lines. Ehrlichia canis and E. chaffeensis, which are considered pathogenic and nonpathogenic to dogs, respectively, were chosen to begin work to test the possible role of this host-pathogen interface in the development of severe acute ehrlichiosis. The pathogenic pairing used was E. canis infecting the canine macrophage-like cell line, DH82. The non-pathogenic pairings were E. canis grown in the murine cell line, J774, and E. chaffeensis in the canine DH82 cell line. In both cases of comparison, the Ehrlichia grew more robustly when part of a pathogenic pairing.