STRONG CHILDREN'S RESEARCH CENTER

Summer 2016 Research Scholar

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ABSTRACT

Title:

Inhibitory Receptor Ligands on Alveolar Epithelial Cells as potential therapeutic targets for Pulmonary Inflammation and Lung Injury in Pneumocystis Pneumonia (PcP)

Background:

Pneumocystis (PC) is an opportunistic fungus that causes a limited asymptomatic infection in immunocompetent individuals but results in Pneumocystis Pneumonia (PCP) in subjects with impaired $CD4^+$ T cell immunity. While detectable anti-PC antibody is commonly found in most humans by 2 years of age, approximately 400,000 cases of PCP occur yearly worldwide is the most frequent HIV-associated opportunistic infection, showing a 20% mortality rate for those with HIV/AIDS and a 30-50% mortality rate for those with cancer or other immune deficiencies. The mortality rate for those placed on a ventilator due to the side effects of PCP is 50% or even higher. The absence of $CD4^+$ T cells during PCP is accompanied by the recruitment of $CD8^+$ T cells to the lung, which are ineffective for host defense against Pneumocystis and cause inflammatory lung injury. Our laboratory recently determined that a high proportion of CD8+ T cells in the lungs during PCP express the inhibitory receptors PD-1 (programmed cell death protein 1) and Lag-3 (lymphocyte