

## Protection against respiratory challenge of *Brucella abortus* in the murine lung

Naveen Surendran

University of Maryland School of Medicine, USA

*Brucella* is amongst the top 5 causes of zoonotic disease worldwide. Infection is through ingestion, inhalation or contact exposure. *Brucella* is characterized as a class B pathogen by Centers of Disease Control and Prevention (CDC). Currently, there are no efficacious vaccines available in people. Available USDA approved vaccines for animals include strain *B. abortus* strain RB51 and *B. melitensis* Rev1. Protection is mediated by a strong innate and CD4 Th1, CD8 Tc1 immune response. If protective vaccines can be developed, disease in people and animals can be controlled. While strain RB51 protects in cattle, and against intraperitoneal challenge in mice, it does not protect against respiratory challenge. Therefore, we assessed the efficacy of strain RB51 combined with different TLR agonists, and O-side chain from LPS, to enhance protection against respiratory challenge with strain 2308. We hypothesized that TLR agonists and O-side chain would enhance protection. Strains RB51TLR2, RB51TLR4 and strain 19 provided significant protection in the lung. Protection from strain RB51+ TLR agonists was associated with increased IgG2a and IgG1 (BAL and serum), and increased IgA (serum). Splenocytes from strain RB51TLR2 vaccinated mice up-regulated antigen specific interferon-gamma and TNF-alpha production. Overall, this study demonstrates the ability of TLR agonists 2, and 4 to up-regulate strain RB51 mediated protection in the lung to respiratory challenge against strain 2308.

### Biography

Naveen Surendran finished his Ph.D. as an outstanding doctoral student from Virginia Tech University in 2010 and since working as a post-doctoral fellow at the Institute of Human Virology of University of Maryland School of Medicine, Baltimore. His research is mainly focused on developing durable vaccines against existing and emerging infectious diseases by defining the basic disease mechanisms and by elucidating the immune response of the host towards the pathogen. He has a number of publications on the host innate immune response mediated by dendritic cells against respiratory *Brucella* challenge infection.

[naveen.surendran@rochestergeneral.org](mailto:naveen.surendran@rochestergeneral.org)