David DeShazer, Ph.D.
Principal Investigator
Bacteriology Division
U.S. Army Medical Research Institute of Infectious Diseases

Abstract

“Vaccination Studies with Live Attenuated Burkholderia Strains”

Burkholderia pseudomallei, the etiologic agent of melioidosis, is responsible for a variety of infections in humans and animals in tropical and subtropical regions. It is facultative intracellular pathogen that has been designated as a Tier 1 select agent because it has the potential to pose a severe threat to public health and safety. No protective antigens have been identified and there are no licensed vaccines. Live attenuated B. pseudomallei vaccines have provided significant protection in animal models of infection, but sterilizing immunity is rarely achieved. In order to improve protection and generate sterilizing immunity, we employed a rational design strategy for the development of live vaccine candidates. Auxotrophic mutants were screened for attenuation and persistence and the best candidates were further optimized with mutations in genes that enable B. pseudomallei to evade the host innate immune response. By combining the best auxotrophic and host immune evasion gene mutations we have generated live vaccine candidates that have resulted in enhanced protection and immunity in BALB/c mice.

Bio-Summary

Dr. David DeShazer is a graduate of the University of Kansas, earning his bachelor’s degree in 1989. He completed his Ph.D. in microbiology and immunology in 1994 at the University of Arizona. From 1994-1998, he was a postdoctoral fellow in the laboratory of Dr. Donald Woods at the University of Calgary. Dr. DeShazer has served as a civilian scientist at USAMRIID for the past 19 years where he conducts research on Burkholderia mallei and B. pseudomallei, the etiologic agents of glanders and melioidosis. His accomplishments at USAMRIID include the identification and/or characterization of the Burkholderia type II secretion system (T2SS), the cluster 3 type III secretion system (T3SS-3), the cluster 1 type VI secretion system (T6SS-1), the LPS O-antigen biosynthetic gene cluster, the capsular polysaccharide gene cluster, the quorum sensing gene clusters, and the VirAG two-component regulatory system. He has served as a session chair, abstract reviewer, invited speaker and/or committee member for all of the World Melioidosis Congresses since 2001.