

Petrobactin: The stealth siderophore of anthrax

Philip C. Hanna

University of Michigan Medical School, USA

Inhalation anthrax is a rapidly progressing infection initiated by uptake of *Bacillus anthracis* spores into the lungs, internalization, germination and primary establishment in the lymph nodes, followed by body-wide dissemination. It is marked by dramatic proliferation of toxin- and capsule bacilli, with titers often reaching $>10^8$ organisms per cc of blood prior to death. A firm requirement for the large increase in bacterial titers, and therefore for fulminant disease, is the ability to acquire essential nutrients from the host. This lecture focuses on *B. anthracis* abilities to acquire iron via biosynthesis, secretion and then reacquisition of the small metabolite siderophore named petrobactin. Petrobactin is sometimes called the “stealth siderophore” for its ability to avoid innate immune clearance. Topics covered include the essential role of petrobactin in virulence, its biosynthesis, its re-uptake into *B. anthracis* via multiple ABC transporter membrane complexes and initial evaluations of small molecules that inhibit iron uptake by this gram-positive bacterial pathogen.

pchanna@umich.edu