

*Salmonella* cause 1.4 million cases of gastroenteritis and enteric fever per year in the US and lead all other foodborne bacterial pathogens as a cause of death. The most serious *Salmonella* disease results from extraintestinal infection and bacteremia. The hallmark of these systemic infections is the ability of *Salmonella* to survive in macrophages, which normally kill bacteria by producing a variety of antimicrobials, including superoxide and other reactive oxygen species. *Salmonella* resistance to the oxidative burst of phagocytes requires periplasmic Copper/Zinc co-factored superoxide dismutase (SodC), which detoxifies superoxide. I will discuss our structure/function analyses that define the properties of SodC that are critical for protection, as well as our studies to define the bacterial targets of phagocytic superoxide.