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Virulence Gene Expression by the Anthrax Bacterium: A Unique Regulator's Role in Host-Pathogen Signaling

Abstract:

Virulence gene expression by *Bacillus anthracis*, the anthrax pathogen, is controlled by the global regulator AtxA. Mutants deleted for the *atxA* gene are toxin- and capsule-deficient and are highly attenuated in murine models for anthrax. Recent structural and biochemical studies provide insight into the previously elusive molecular function of this regulator. AtxA contains domains that are classically associated with the phosphoenolpyruvate: carbohydrate phosphotransferase system (PTS), a bacterial system responsible for sugar uptake and utilization. Nevertheless, our data suggest that AtxA is not influenced by the PTS in a manner consistent with the currently accepted model. Moreover, we have determined that *B. anthracis* produces paralogous regulatory proteins that have overlapping yet distinct functions in gene control. Our work explores *B. anthracis* virulence gene control, while having a broader impact on knowledge of a central metabolic regulatory system that is common among Gram-positive bacteria and linked to virulence in many pathogens.

Keck Seminar

Friday, March 23, 4pm

BioScience Research Collaborative

Room 280 (2nd Floor)



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