

Title:

The Expression of Protective Capsular Polysaccharides by the Opportunistic Pathogen *A. baumannii* Responds Phenotypically to Antibiotic Stress

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Abstract:

Nosocomial infections with multidrug-resistant bacteria raise morbidity and mortality in hospitalized patients and pose an increasing challenge to clinicians. The most common agents of nosocomial infections are successful because they can withstand the antimicrobial effects of both the host innate immune system and antibiotic treatment. How bacterial defense phenotypes are modulated by host and nosocomial factors such as antibiotics is poorly understood, although such information may lead to novel approaches to treat nosocomial infections. Here we demonstrate that the opportunistic pathogen *Acinetobacter baumannii* reversibly augments expression of its key virulence determinant, capsular polysaccharide, upon antibiotic-induced stress. We have identified multiple novel regulatory loci in the bacterium that control basal- and stress-induced capsular polysaccharide expression. In addition, we have developed mouse and tissue-culture models to interrogate the roles of stress-responsive capsular polysaccharides in lung infection and phagocyte interactions.