

AMINO-TERMINAL SEQUENCES OF THE BACILLUS ANTHRACIS
EXOSPORIUM PROTEINS BCLA AND BCLB IMPORTANT FOR LOCALIZATION
AND ATTACHMENT TO THE SPORE SURFACE

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ABSTRACT

The exosporium is the outermost layer of the *Bacillus anthracis* spore. The predominant protein on the exosporium surface is BclA, a collagen-like glycoprotein. BclA is incorporated on the spore surface late in the *B. anthracis* sporulation pathway. A second collagen-like protein, BclB, has been shown to be surface exposed on anthrax spores. We have identified sequences near the N-terminus of the BclA and BclB glycoproteins responsible for the incorporation of these proteins into the exosporium layer of the spore and used these targeting domains to incorporate reporter fluorescent proteins onto the spore surface. The BclA and BclB proteins are expressed in the mother cell cytoplasm and become spore-associated in a two step process involving first association of the protein with the spore surface followed by attachment of the protein in a process that involves a proteolytic cleavage event. Protein domains associated with each of these events have been identified. This novel targeting system can be exploited to incorporate foreign proteins into the exosporium of *B. anthracis* resulting in the surface display of recombinant immunogens for use as a potential vaccine delivery system.