

EXECUTIVE SUMMARY: (State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project for California.)

Bacillus anthracis, the causative agent of anthrax, has been categorized as a “class A agent” by the center for disease control and prevention (CDC).¹ This classification states that anthrax poses a significant threat to human health.¹ The spore form of anthrax is extremely rugged and can handle severe environmental conditions, which makes it an optimum delivery vehicle for bio-warfare applications. Sadly, anthrax has already been used with lethal effects. In 1979 the Soviet military covered up an “accidental” release that ended up killing 64 people.² In 1993 the terrorist group, Aum Shinrikyo, attempted to release anthrax over a Japanese city.³ Fortunately, the strain that was released was not fully virulent.³ The most recent event occurred in 2001, in which anthrax was sent through the U.S. mail and resulted in five deaths.⁴ In each of these cases it took days to weeks to discover that exposure to anthrax had occurred.²⁻⁴ Obviously this amount of time for detection is unsatisfactory for effective treatment of those exposed. Consequently, a rapid method for the detection of *B. anthracis* is desperately needed. The focus of this proposal is to develop a mass spectrometry based method for early detection and species identification of *Bacillus* spores by targeting plasmid-borne protein toxins as biomarkers.