



SCIENCE FOR THE BENEFIT OF HUMANITY

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A Novel Diagnostic Tool For The Rapid Identification Of *Bacillus anthracis*

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Technology Summary

Anthrax is a disease caused by the notorious biological agent *Bacillus anthracis* that can be easily manufactured and transported in a dormant form called endospores. Anthrax endospores can survive in soil, fur, clothing or other inhospitable environments for several years and survive later in more favorable conditions. The current gold standard for identifying the possible presence of *B. anthracis* involves testing for gamma (γ) phage sensitivity. This classical bacteriological method identifies the γ phage receptor on the *B. anthracis* cell wall resulting in phage infection causing clear zones or plaques. However, the γ phage diagnostic test is not entirely specific to *B. anthracis* and has a wider host range, frequently resulting in false positives. In addition, this test is time-consuming and requires five days to obtain the results.

Our investigators have identified that *Wip1* phage exhibits a very narrow host range and is highly specific for *B. anthracis*. The high specificity is a result of the initial recognition and binding of the receptor binding proteins on the phage coat with the receptors on the bacterium's surface. This high specificity results in a superior tool for the efficient identification of *B. anthracis*. Additionally, our scientists show that *Wip1* plaques can be detected within 12 hours of post-infection, in comparison to γ phage, making it a rapid assay. Our investigators have also identified and isolated the binding ligand from the *Wip1* phage that may be labeled and used directly on the organism for a more rapid readout.

Application

Diagnostics. These reagents are useful for the diagnostic identification of pathogenic *Bacillus anthracis*, either using the phage or the phage ligand protein.

Advantages:

- Highly sensitive and rapid method to identify *Bacillus anthracis*

Stage of Development

- Discovery

Lead Inventors

- Dr Vincent Fischetti

Patent Information

- Patent pending

References

- Kan *et al.*, *J. Bacteriol.*(2013), 195(19):4355-4364

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