

Identifying Different Strains of Bacillus

The ability to distinguish between different strains of bio-pathogens, including harmful and benign strains is important in the detection of biohazards. Using the CytoViva Hyperspectral Microscope System, two different non-virulent bacterial spores were imaged. The hyperspectral images below illustrate *Bacillus globigii* spores (Figure 1) and *anthracis* spores (Figure 2). Areas where spectra was collected from these spores are marked as green and red.

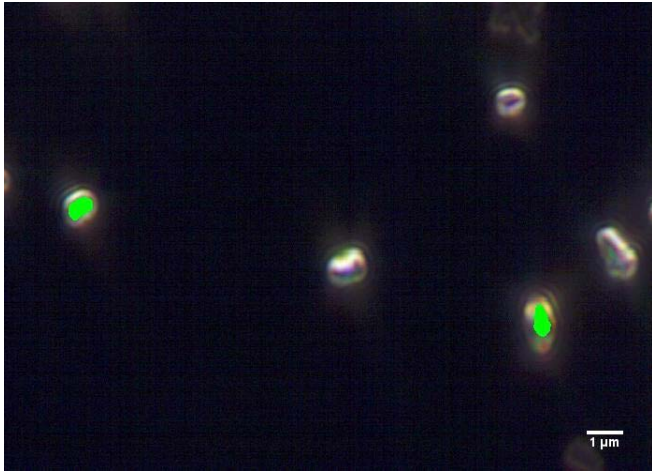


Figure 1. unstained spores of *Bacillus globigii*



Figure 2. unstained spores of *Bacillus anthracis*

The spectra from the two different species is illustrated in the spectral library in Figure 3. These different spectra are easily distinguished by variances in their peak location and shape.

Additionally, the spectra from each sample was successfully mapped onto subsequent samples of the same species. However, when attempting to map spectra from samples that were not of the same species, no false positives were recorded. This indicates that the CytoViva Hyperspectral Microscope System may provide an accurate method for rapid detection of different species of spores, base on their unique reflectance spectra.

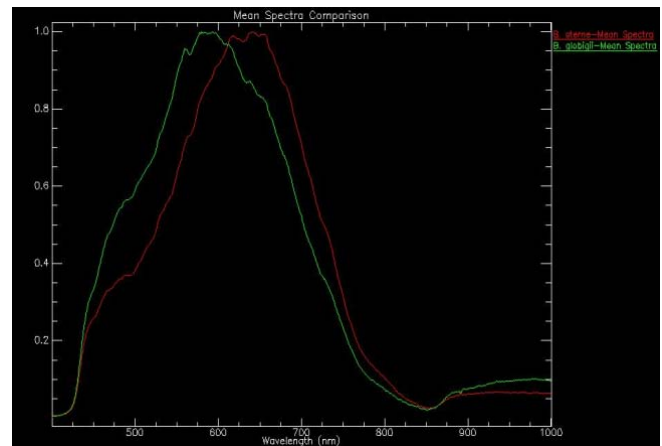


Figure 3. Spectral Library

In addition to *Bacillus* spores, CytoViva's Hyperspectral Microscope System has been utilized to characterize and distinguish many other types bio-pathogens including bacteria and viruses.