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A METHOD FOR THE AMPLIFICATION OF TRACE MICROBIAL DNA SAMPLES FOR FORENSIC ANALYSES

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Many forensic samples consist of a few genomes of material and thus are below the limits of detection for most PCR based forensic analyses. For crimes involving biological weapons such as *Bacillus anthracis* this represents low femtogram quantities of DNA. As many microbial forensic samples may not be cultivable due to sterilization the ability to amplify these samples for genetic analysis can be especially important. Once the genomic DNA is amplified it can be used in any number of forensic genotyping assays.

In this study we use the Ibis Biosciences highly optimized multiple displacement amplification (MDA) for the whole genome amplifying (WGA) of trace bacterial DNA.
Trace DNA samples were amplified and used in the Ibis Biosciences T5000 *Bacillus anthracis* genotyping I assay. This assay employs eight PCR reactions that are analyzed by electrospray mass spectrometry. This assay can resolve *Bacillus anthracis* from its near-neighbors and can definitely identify *Bacillus anthracis* Ames strains from other *Bacillus anthracis* strains.

Bacillus anthracis DNA samples were diluted down to low femtogram levels (single genomes) and characterized using the Ibis assay with and without WGA. Detection of WGA samples was near the stochastic limits of detection demonstrating the value of this approach for the forensic analyses of trace microbial evidence.