
# Fast, accurate and quantitative screening of antibiotic resistant S. Aureus using Advanced Testing for Genetic Composition (ATGC)

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Several infections can contain more strains of micro-organisms. State of the art is bacterial culture, and quantifying the amount of antibiotic resistant and susceptible bacteria requires a double culture process. These processes are slow, expensive, and often result in a therapy being prescribed BEFORE the results are available.

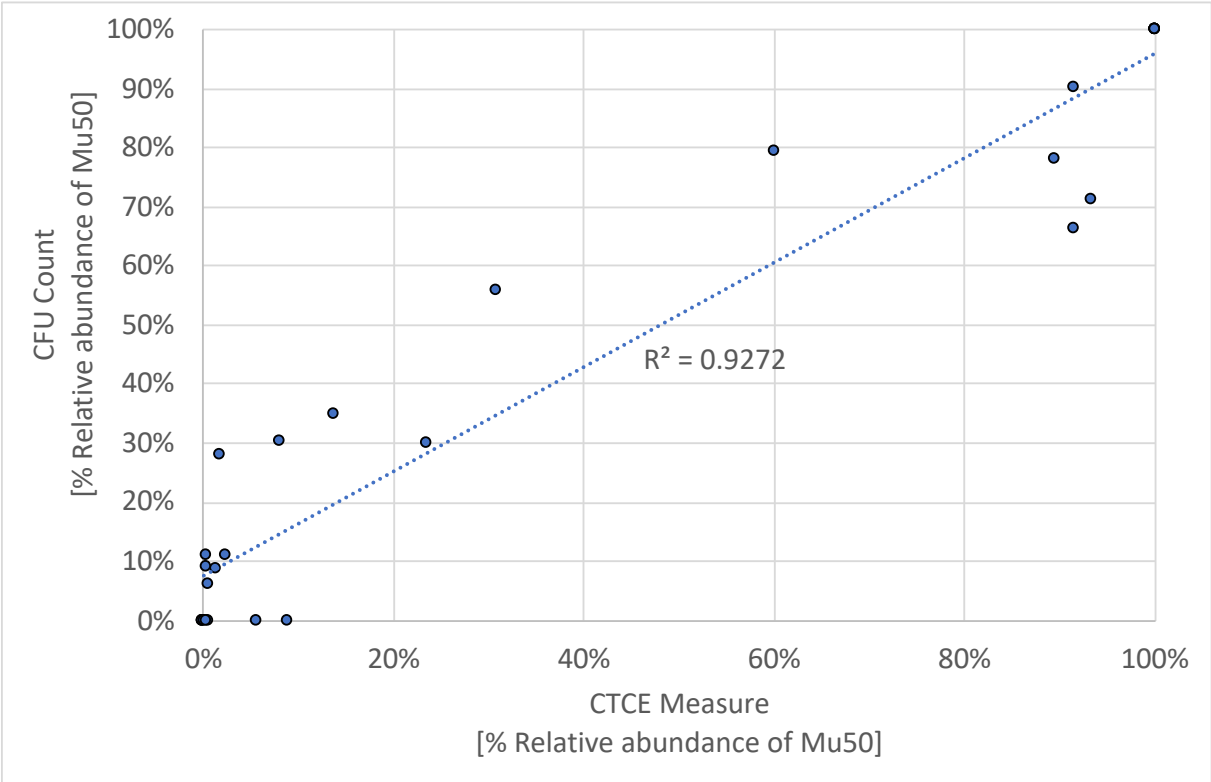
Advanced Testing for Genetic Composition (ATGC) is a technology that incorporates bio-informatics, with Cycling temperature capillary electrophoresis (CTCE). Specialized assays can be designed for a variety of pathogenic groups, and results can be produced within 2h. ATGC is here benchmarked against culture methods.

**Methods:** 2 strains of *Staphylococcus aureus* have been selected: mu50 which is Vancomycin resistant, and Newman, which is not. Mixed cultures of Newman and mu50 were produced and grown in different vancomycin concentrations and repeatedly sampled.

Samples were then split into 2 agar plate, one with a high concentration of Vancomycin, and one without. The relative abundance of mu50 in each sample could be inferred from the relative CFU count.

Using ATGC, an assay was designed to differentiate mu50 from Newman. The same samples were processed by ATGC: a combination of PCR, CTCE, and bio-informatics.

**Results:** There was a strong correlation between the CFU count and ATGC results. Variability between technical replicates of ATGC was less than 5%, and 10% for CFU count. These results support the further development of ATGC for point-of-care diagnostics.




*Correlation between CFU Count and ATGC measures.*

*(a new version of this figure will be presented on the poster as the data is being processed from a technical repeat).*