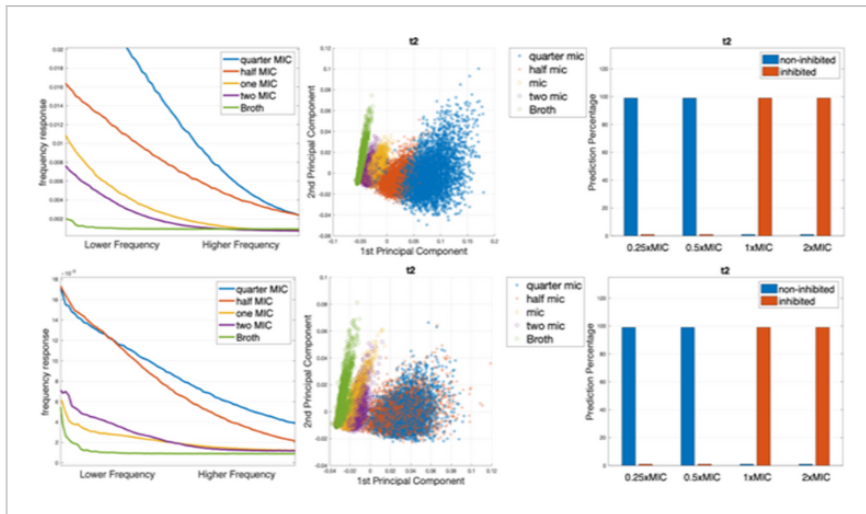


# Dynamic Holographic Laser Speckle Imaging for Antimicrobial Susceptibility Testing (DhLSI-AST)

ID# 2023-5699

TECHNOLOGY READINESS LEVEL

4-7



Top) results of E. coli, and Bottom) results of E. faecalis.

## Technology Summary

Researchers at Penn State have developed a label-free dynamic holographic speckle imaging technique (system and method), which can perform antimicrobial susceptibility testing (AST) rapidly with ultrahigh sensitivity, enabling healthcare professionals to provide effective treatment to patients. It can perform AST of bacteria at low concentration of only 10<sup>3</sup> CFU/ml, which is 2 orders of magnitude lower than standard broth microdilution, enabling direct detection and early diagnosis with faster AST and minimal isolate preparation. These methods promise to facilitate bacterial infection treatment by providing an efficient and effective solution for healthcare professionals.

## Application & Market Utility

Bacterial infections are responsible for 1 in 8 global deaths, which is the second-highest number of deaths worldwide, according to the study conducted by the University of Oxford. Based on the National Institute of Health, the traditional antimicrobial susceptibility testing, which can take up to 24hrs, often delays essential treatment. This method will facilitate the bacterial infection treatment by providing an efficient and effective solution for healthcare professionals.

## Next Steps

This holographic speckle imaging system and method continues to be tested, and researchers seek licensing and research support opportunities.

### Seeking

Licensing | Research

### Keywords

- Antimicrobial Resistance
- Antimicrobial Susceptibility
- Rapid AST
- Holographic Speckle Imaging

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