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## Inventors

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## Rapid Detection of Urinary Tract Infections

-With the increase in evolution and resistance to multiple, commonly used antibiotics, bacterial infections are becoming an even greater public health concern. Urinary tract infections are particularly concerning given their high morbidity and high recurrence rates. Diagnosing bacterial infections relies on isolation and culture methodologies, a process that is slow and results in empirical treatments and greater risk of antimicrobial resistance. While rapid UTI detection technologies have been proposed, few have been shown to work directly with clinical samples.

Researchers at the Biodesign Institute of Arizona State University have developed a novel point-of-care compatible test for rapid bacterial detection in less than 10 minutes. This test can be performed directly on a urine sample and does not require bacterial enrichment and isolation. Using a background-free imaging-based system, multiple intrinsic bacterial phenotypic features can be tracked. When evaluated on 104 clinical urine samples, this test showed direct detection of UTIs in under 10 minutes with a 92.3% accuracy compared to both the clinical lab culture result and the parallel validation results.

This test opens the door for rapid UTI screening at the point-of-care setting, enabling better patient care and reducing the need for empirical antimicrobial prescriptions for non-bacterial infections.

### Potential Applications

- Rapid detection of bacterial UTIs

### Benefits and Advantages

- Rapid – less than 10 minutes and could be reduced to 5-6 minutes
- Compatible with point-of-care settings – allows direct analysis of clinical

samples

- Does not require bacterial enrichment and isolation
- 92.3% accuracy in direct UTI detection
- May help reduce the unnecessary prescription of antibiotics
- Can distinguish bacteria from urine particles, determine bacteria with different shapes and even identify E. coli
- Sufficient volume of the specimen can be observed in a single field of view
- Label-free and non-invasive

For more information about the inventor(s) and their research, please see

[Dr. Wang's Biodesign webpage](#)