



## TECHNOLOGY

# Rapid Separation of Bacteria from Complex Samples

## OVERVIEW

### Background

Foodborne illness in the United States costs billions of dollars each year in health care and other losses. While many of the pathogenic bacteria responsible for foodborne illnesses are known, and testing for them is routine, contaminated food still reaches the consumer. Part of the problem may be due to the length of time required to test food samples for contamination. Despite the development of modern detection methods, the time required for testing takes days, meaning most food is sent to consumers before testing has been completed.

The slowest part of pathogen testing is sample preprocessing. Test samples are often a complex mixture of small numbers of pathogens combined with large numbers of other cells, foreign DNA, and other solid particles. The presence of these other constituents interferes with the detection of the pathogens. Therefore, a bacterial enrichment step is often required. This enrichment can take 24 hours and is the longest step in the testing process. As the population grows, there will be an increased need for rapid and accurate food safety testing. Ideally, testing that can produce results within a single eight-hour work shift would allow results to be obtained prior to food being shipped to consumers.

### Innovative Technology

A researcher at the University of Maryland has developed a microfluidic chip that allows for the separation of bacteria from an unenriched sample in less than an hour. By separating the bacteria from the sample, specific strains can be identified by PCR testing. This disposable chip is designed to load and extract samples using simple pipetting. This simplicity makes the chip easy to use for any lab technician or for quick extraction in the field by onsite testers.

## APPLICATIONS

- Food safety laboratory testing
- Onsite testing of food production

## ADVANTAGES

- Reduced time of testing
- Simple to use device
- Customizable to test for different specific pathogens

## CONTACT INFO

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## Additional Information

## INSTITUTION

University of Maryland, College Park

## **PATENT STATUS**

Pending

## **LICENSE STATUS**

Available for exclusive or non-exclusive license

## **CATEGORIES**

- Microfluidics
- Devices

## **EXTERNAL RESOURCES**

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