

Portable waterborne pathogen detector

Tech ID: 28879 / UC Case 2017-809-0

BRIEF DESCRIPTION

The inventors at the University of California, Irvine, have developed an automated, easy-to-use digital PCR system that can be used at the time of sample collection, making it highly effective in microbial pathogen analysis in resource-limited settings and extreme conditions.

FULL DESCRIPTION

Waterborne microbial pathogens pose a significant public health issue, causing approximately 1.8 million deaths every year, and causing waterborne disease outbreaks both in developing and developed countries. Making copies of genetic microbial material in liquid samples via Polymerase Chain Reaction (PCR) is the preferred method for microbial pathogen detection. However, current PCR systems are difficult to apply in situations other than controlled laboratories with highly trained personnel.

Researchers at UCI have developed a semi-automated, digital PCR system that is easy to utilize even for users with minimal training at the same time the sample is collected. This minimizes time spent on sample transportation and preparation, and therefore this easy-to-use digital PCR system can be used even in resource-limited settings and harsh conditions (i.e. after natural disasters). This device has the potential to be used not only for water quality and environment monitoring, but also in the testing of food quality and safety as well as a convenient diagnostic tool for infections in humans.

SUGGESTED USES

- » Water quality assessment
- » Clinical diagnostics
- » Food safety
- » Biosecurity

ADVANTAGES

- Pathogen detection able to be done at point of sampling (reduced time to results)
- Designed to be used in the field (environmental marketing): requires no other equipment; able to be used in low-resource settings and in severe conditions (i.e. after natural disasters)
- End-user friendly due to integrated, semi-automatic system: 1 step, 1 device (compare to 4 steps, 4 devices design currently sold by Bio-Rad)
- Cost-effective due to less parts; disposable plastic discs for loading samples can be manufactured in mass at lower costs using hot embossing or injection molding

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OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
 - » Food
 - » Health
- » **Environment**
 - » Other
- » **Medical**
 - » Diagnostics
 - » Disease: Infectious Diseases
- » **Research Tools**
 - » Other
- » **Security and Defense**
 - » Food and Environment
- » **Sensors & Instrumentation**

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20190105653	04/11/2019	2017-809

» Environmental
Sensors

» **Veterinary**

» Diagnostics

RELATED CASES

2017-809-0

STATE OF DEVELOPMENT

Prototype developed; field testing in progress

UCI Beall
Applied Innovation

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