

Detects, Differentiates and Identifies:
Multiple Foodborne Pathogens in One Test

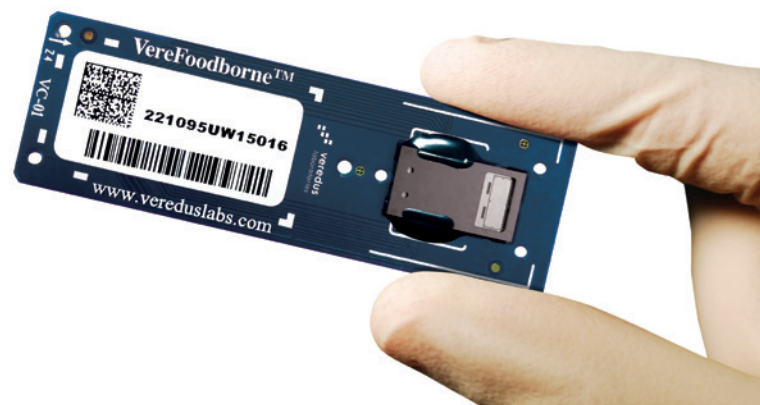
Rapid Detection, Differentiation and Identification of Major Foodborne Pathogens

Foodborne diseases are responsible for a wide range of illnesses and complications ranging from diarrheal diseases to various forms of cancer. Serious outbreaks of foodborne diseases have been documented in both developed and developing countries in the past decade, and the rate of illnesses are increasing significantly owing to the key factors of increased consumption of minimally processed food, the globalization of the food supply and the mass production and distribution of ready-to-eat food. In the United States alone, the Centers for Disease Control and Prevention (CDC) estimates that there are approximately 48 million cases of foodborne diseases, resulting in 128,000 hospitalizations and 3,000 deaths each year¹.

Food safety is clearly a growing public health problem, and prompt actions to identify and contain foodborne illness outbreaks are needed to bring down the rate of foodborne illness and to protect public health. To date, current methodology to identify foodborne pathogens either for surveillance or to contain possible outbreaks requires much time and effort before they can be identified and this slows down the response time of health authorities, thus delaying efforts of treatment and containment.

To meet this need, Veredus offers a new solution: VereFoodborne™. This Lab-on-Chip application, together with the VerePLEX™ Lab-on-Chip platform, allows for rapid detection, differentiation and identification of major foodborne pathogens and is suitable for use even at point of need. This includes outbreak points, hospitals and food manufacturers.

¹ Centers for Disease Control and Prevention (CDC). Estimates of Foodborne Illness in the United States. <http://www.cdc.gov/foodborneburden/>.



Specifications

Detects multiple foodborne pathogens

Multiple Probes (with duplicates) for:

- *Bacillus* spp.
- *Campylobacter jejuni / lari / coli*
- *Clostridium perfringens*
- *Cronobacter sakazakii*
- *Listeria* spp.
- *Salmonella* spp.
- *Escherichia coli*
- *Shigella* spp.
- *Staphylococcus aureus*
- *Vibrio cholera*
- *Vibrio parahaemolyticus*
- stx1A gene
- stx2A gene
- NLV Geno Group I*
- NLV Geno Group II*

*Optional, please enquire about product if interested

Process controls on each chip:

- PCR: Positive and Negative Controls
- Hybridization: Orientation and Hybridization Probes

Limit of Detection: 100 copies of extracted genomic DNA

Sample Types:** meat, fish, vegetables, milk, water, processed foods, stool or vomit sample

**Pre-enrichment is required for some sample types.

Every chip is bar-coded and measures 2.54cm x 7.62cm

Robust and Time-tested Technologies:

Polymerase Chain Reaction (PCR) and microarray gives the VereFoodborne™ chip the accuracy and sensitivity needed to provide answers in the shortest possible time.

Breakthrough Innovation:

The integration of two powerful molecular biological technologies enables the development of the VereFoodborne™ chip into a fast PCR-microarray based diagnostic test using the VerePLEX™ Biosystem to simultaneously detect, differentiate and identify selected biological agents all in a single test. With the flexibility afforded by our customizable updates in our VereChip™ target panels, we are able to provide diagnostic and surveillance tools needed today and be ready for the next threat tomorrow.

Veredus Laboratories, the future of diagnostics and surveillance, today.

Features

- Multiplex amplification reactions
- Multiple probes per target ensures reliable detection of subtypes in every test
- Small sample volume requirement
- Fast and programmable temperature ramp rate
- Scalable for high throughput
- PCR yield is comparable to standard thermal cyclers
- 40% faster than conventional thermal cyclers
- Functional validation of PCR is provided by an internal positive control
- Functional validation of hybridization for each assay is provided by an internal positive hybridization control
- Proprietary microfluidic interface: contact surfaces are biocompatible and do not inhibit the PCR reaction
- Short time required for fluidic operations

Advantages

Speed

- Fast turnaround time—sample to answer in less than 3 hours to provide multiple results versus 2 or more days for culture-based testing
- Rapid detection of foodborne pathogen(s) enables prompt action by food safety authorities to control foodborne epidemics

Comprehensive

- Tests for selected generic and specific foodborne pathogens in a single assay

Mobile

- The VerePLEX™ Biosystem is designed to be portable for usage at areas such as checkpoints and borders.

Easy to use

- The simple workflow allows for minimally trained or non-scientific personnel to run tests

Updates Available

- Probes can be updated quickly to include new mutations of evolving strains and ensure wider coverage of detection



VerePLEX™ Biosystem

VerePLEX™ Biosystem combines molecular biology, microfluidics and microelectronics to bring the future of diagnostics and surveillance to you today. The VerePLEX™ Biosystem, along with the VereChip™, is a breakthrough in innovation, integrating two powerful molecular biological technologies: PCR and Microarray.

VerePLEX™ Biosystem includes the following components:

- Temperature Control System (5 random access modules)
- Optical Reader
- Biosystem Software
- Barcode Reader