



Droplet Digital™ PCR for Food Testing



Droplet Digital PCR (ddPCR™) employs advanced microfluidics technology to generate thousands of highly uniform nanoliter-sized droplets in each sample, achieving sample partitioning on a massive scale. Once generated, the droplets can be amplified, read, and analyzed. In traditional PCR, a single measurement is performed on a single sample, while in Droplet Digital PCR, thousands of measurements can be performed on each sample.

- Next-day confirmation results
- Fewer presumptive positives than with PCR
- Useful for various food safety applications, such as colocalization, genetically modified organism (GMO) testing, food fraud, bacterial monitoring, pathogen enumeration, and virus detection

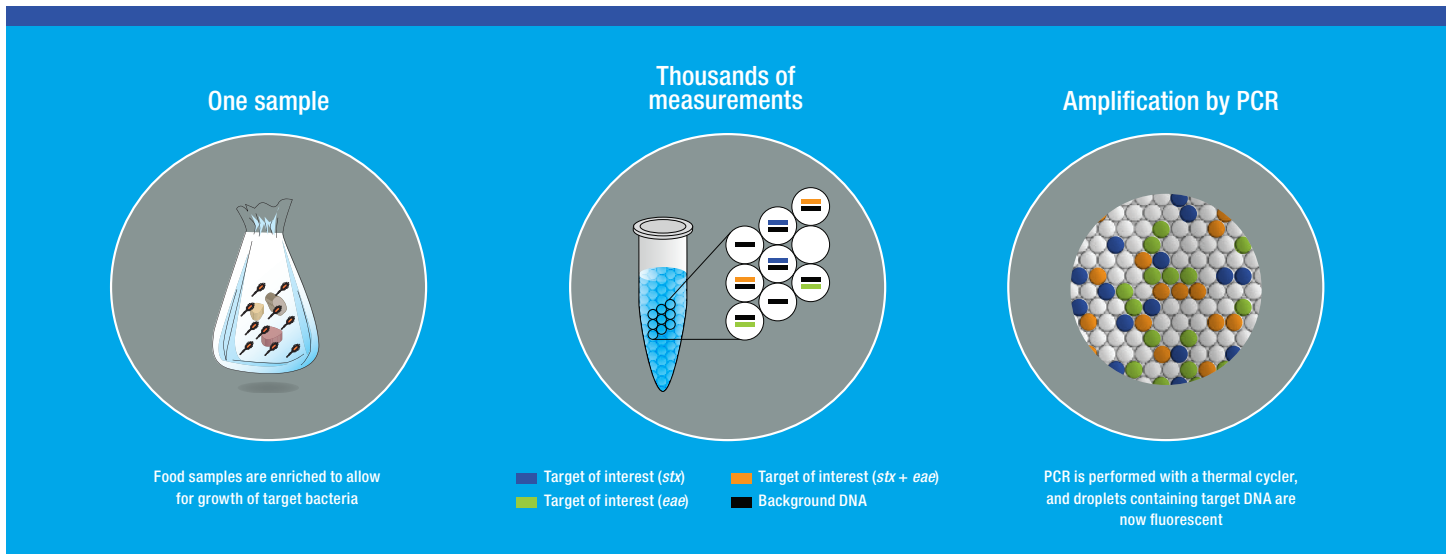
Principle of Colocalization

Colocalization can be used to accurately detect enterohemorrhagic *Escherichia coli* (EHEC), which is a highly pathogenic subset of Shiga toxin-producing *E. coli* (STEC), in a variety of food matrices.

Food with a single *E. coli* bacterium that carries both the *stx* gene for Shiga toxin production and the *eae* gene for the intimin attachment protein is positive for EHEC. This can be challenging for other technologies to distinguish. Droplet Digital PCR can encapsulate bacteria inside each droplet, making it possible to accurately detect an *E. coli* bacterium carrying both virulence genes.

dd-Check STEC Solution

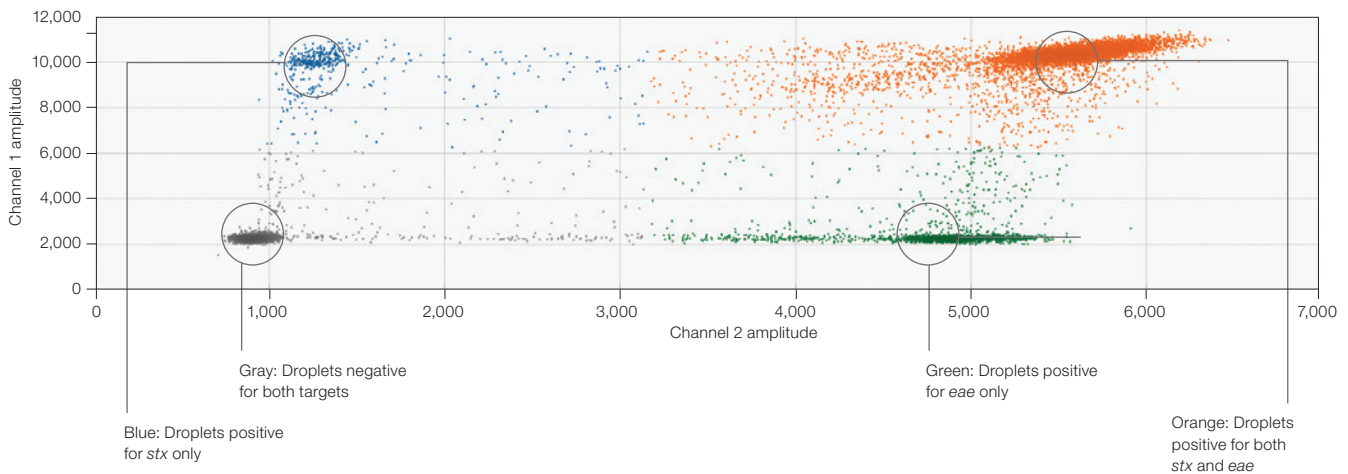
The dd-Check STEC Solution uses ddPCR technology to distinguish bacteria with true, double-positive linked virulence genes in a sample from bacteria containing single-positive or unlinked virulence genes, reducing the number of false-positive STEC results. This detection and linkage verification of targets in a single bacterium enhances the accuracy of pathogenic *E. coli* testing.



An excess of double positives reveals the presence of two markers on the same genome, which can be statistically established (percentage linkage).

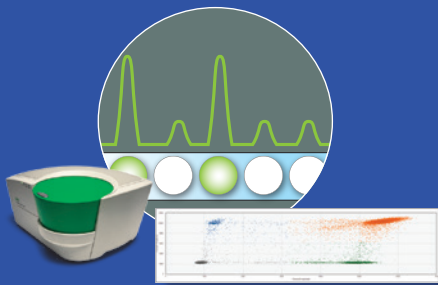
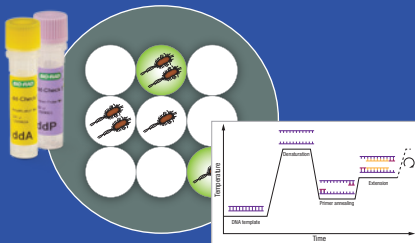
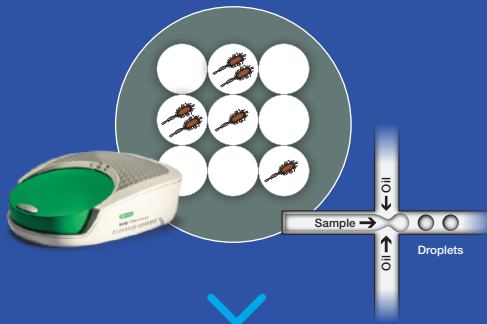
Qx IDE Manager Software

The Qx IDE Manager Software was designed specifically for food safety applications. It provides complete automated analysis of the dd-Check STEC Kit assay. Results interpretation is based on the presence or absence of the two targets (*stx* and *eae*) and on the linkage analysis showing the colocalization of these virulence genes coming from a single bacterium.



dd-Check STEC Workflow

The dd-Check STEC workflow is scalable to allow users the flexibility to test 1 to 94 samples per plate. Laboratories can use the dd-Check STEC solution as an initial screening tool or after screening with the iQ-Check™ STEC Kits for next-day confirmation of pathogenic *E. coli*.



1 Enrichment and Sample Preparation

- Enrich sample in 16–24 hr
- Filter and concentrate sample

2 Generate Droplets

- Load the filtered sample, ddPCR reaction mix, and oil into the wells of a droplet generator cartridge
- 8 x 20,000 droplets are generated from each run of the QX200™ Droplet Generator

3 Perform PCR

- Transfer the droplets to a 96-well PCR plate and seal the plate
- Run the PCR protocol

4 Read Droplets and Analyze Results

- After PCR, load the 96-well PCR plate into the QX200 Droplet Reader
- Analyze linkage with Qx IDE Manager Software



QX200 Droplet Reader and Generator

Droplet Generation Oil

dd-Check STEC Kit

Ordering Information

Catalog #	Description	Catalog #	Description
17004826	dd-Check STEC Solution, includes kit and oil	17005227	QX200 Droplet Generator
12010000	dd-Check STEC Droplet Generation Oil	17006702	Laptop for QX200 Droplet Digital PCR System
12009999	dd-Check STEC Kit	17005226	PX1 PCR Plate Sealer
3554179	Buffered Peptone Water Broth, 6 bottles x 225 ml	17005221	ddPCR Droplet Reader Oil, 2 x 1 L
3564684	Buffered Peptone Water Broth, 500 g	17005222	DG8 Cartridges for QX200 Droplet Generator, package of 24
3564005	Selective STEC Supplement, 1 g	17005223	DG8 Gaskets for QX200 Droplet Generator, package of 24
3578139	iQ-Check STEC VirX PCR Detection Kit	17005224	ddPCR 96-Well Plates, semi-skirted, 25
12013174	iQ-Check STEC SerO II PCR Detection Kit	17005225	Pierceable Foil Heat Seals
17005228	QX200 Droplet Reader	1863051	DG8 Cartridge Holder

Visit bio-rad.com/ddcheck for more information.

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