

food safety



Minimize risk.
Maximize competitive edge.

Applied Biosystems Food Pathogen Detection Solutions

ThermoFisher
SCIENTIFIC

It's time to put your pathogen testing to the test

When the world's biggest brands can't afford to be wrong, there's one company they consistently turn to—Thermo Fisher Scientific. That's because our partnerships help provide the competitive edge your company expects, with the risk reduction your lab demands.

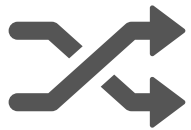
From fast, accurate and intuitive tools built on an open-design platform, to dedicated global service and support, our expert team specializes in workflows that help labs work smarter. It's all about enabling you to make more informed decisions in the most efficient way.

Many of our assays are performance tested and have been granted external validation certifications by leading regulatory bodies for food safety, such as Performance Tested MethodSM status by the AOAC Research Institute, NF VALIDATION certification by AFNOR Certification, approval by DAFF and NPIP Rapid Assay approval by USDA APHIS.



Understanding your needs

- Rapid time-to-result
- Demonstrated accuracy
- Validated workflows
- Workflow optimization and customization services
- Open instrumentation and flexible sample preparation options for low and high sample volumes
- Scalable, flexible and easy-to-use platforms



Synthesizing the situation

Thermo Fisher has leveraged its assay design, high-speed sequencing and bioinformatics expertise to develop food safety solutions that deliver results you can trust. With customized solutions designed for your specific workflow and food testing requirements, no company is better equipped to respond with answers when you need them most.



Building a partnership

The dedicated team of Thermo Fisher food safety professionals partners with some of the world's most respected labs and food producers to protect their brands and bottom line. We understand the demands on your business and the importance of achieving rapid time-to-results without compromising accuracy.

A history of partnering with a variety of food testing labs and brands to help them through critical times.

***E. coli* O104:H4 outbreak response in record time**

In only 10 days, Thermo Fisher sequenced and identified the deadly strain of *E. coli* discovered in Europe, helping to develop a screening test that delivered results within 24 hours.



***Salmonella* detection for a leading pet food producer**

Thermo Fisher designed and validated a complete streamlined workflow to detect *Salmonella* in pet food in under 14 hours with an automated Real-Time PCR method, cutting time-to-result by days.



Rapid recall response for large US poultry producers

During recent ground turkey and chicken recalls, Thermo Fisher partnered with two of the largest poultry producers in the US to find a rapid detection solution for the *Salmonella* serovar of interest.



Simplified workflow

From enrichment to analysis, our integrated workflow is optimized to ensure you get the answers you need, when you need them. These flexible sample preparation options scale from fewer than 50 samples to high-throughput runs of 100 or more samples per day, and the protocols have been tested on a wide variety of food types. And by automating the amplification, detection, data collection and analysis elements of the molecular detection workflow, Thermo Fisher drastically cuts hands-on time and time-to-results, which is critical to protecting your brand and your bottom line.

Intuitive software solutions simplify data interpretation

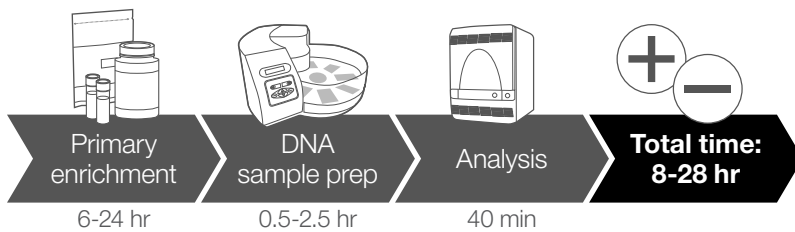
Applied Biosystems™ RapidFinder™ Express Software is easy to use and guides you through each step of the assay—from run file setup to interpreting final results.

The software utilizes flags, notifications and prompts that enable you to quickly interpret data, while a helpful export feature supports convenient data transfers to an Excel® spreadsheet or your lab management system.

This interactive, open software allows for troubleshooting analysis and further investigation as well as running other PCR assays.



Our pathogen detection solution



Immunoassays



*Dependent on assay

Traditional culture



Exceptional speed and sensitivity

Our complete pathogen detection solution offers one of the fastest and most sensitive methods available, detecting cell concentrations as low as 10^3 – 10^4 CFU/mL after enrichment. This level of sensitivity enables the detection of many pathogens in under 24 hours, as compared to several days with conventional methods.

Moreover, in cases of emergencies related to new foodborne pathogens, the ultrafast DNA sequencing capabilities, combined with our bioinformatics expertise, allow us to respond quickly to these kinds of crises and design highly specific assays to detect the pathogens that may be involved.

Sample preparation

Rather than taking a one-size-fits-all approach, we provide multiple sample preparation options for pathogen testing that easily integrate into laboratory workflows with minimal operator training. In combination with the Applied Biosystems™ MicroSEQ™ and Applied Biosystems™ RapidFinder™ pathogen detection kits, the Applied Biosystems™ PrepSEQ™ and Applied Biosystems™ Pathatrix™ sample preparation protocols have been tested on a wide range of samples, including environmental, chocolate, infant formula and soft cheeses. Even samples with difficult-to-lyse bacteria, such as *Listeria*, produce excellent results.



Fewer than 50 samples

PrepSEQ Rapid Spin Sample Preparation Kit

- Works on a wide range of sample types
- Reduces pre-enrichment time
- Minimal training required



More than 50 samples

PrepSEQ Nucleic Acid Extraction Kit and Applied Biosystems™ MagMAX™ Express-96 Processor

- Works on a wide range of sample types
- Reduces pre-enrichment time
- Ready for automation—reduced hands-on time



Challenging samples with low positivity rates

Pathatrix Auto System and Kits

- Works well on challenging sample types
- Cleans up sample to remove inhibitors to reduce PCR indeterminate and false positive rates
- Fully compatible with a wide range of detection methods



Validated detection kits

Built on years of molecular expertise, MicroSEQ and RapidFinder pathogen detection kits deliver exceptional accuracy and time-to-results in one easy-to-use platform. Selected kits have been validated and certified by the leading global quality assurance organizations including AOAC-RI, AFNOR Certification, DAFF and NPIP.

These optimized kits are built with lyophilized reagents into preformatted assay beads which include an internal positive control, so PCR reagent preparation is not required. Specially designed reaction tubes are sealed closed after sample addition and not re-opened at any time, greatly reducing the risk of laboratory contamination with amplified target DNA.

- Internal positive control in every bead minimizes false negative interpretations
- Typically 40-minute instrument run time using TaqMan™ Fast Real-Time PCR chemistry
- Universal PCR cycling conditions offer flexibility to run multiple pathogen assays simultaneously
- High specificity for confidence in results based on exclusivity strains tested
- Easy-to-use lyophilized format for test consistency
- Optimal performance with a wide range of common and challenging sample types including poultry meat and production samples, pet food and beef

Approvals and Certifications

	 MicroSEQ Salmonella spp. Detection Kit	 Applied Bioystems™ TaqMan™ S. Enteritidis Detection Kit	 RapidFinder STEC Screening and Confirmation Kits	 MicroSEQ E.coli O157:H7 Detection Kit	 MicroSEQ Listeria monocytogenes Detection Kit	 MicroSEQ Listeria spp. Detection Kit
PTM Status granted by AOAC-RI	#031001		Pending	#071001	#011002	#021108
NF VALIDATION Certification granted by AFNOR	ABI 29/02-09/10			ABI 29/03-03/11	ABI 29/05-12/11	ABI 29/04-12/11
NPIP Rapid Assay approval by USDA APHIS	●	●				
Australian Government Department of Agriculture approval (DAFF)	●	●		●	●	
Spanish Ministry of Agriculture Registration	3472-RD					
FDA 'letter of no objection' e.g. equivalency to FDA-BAM			●			

Versatile TaqMan detection kits

Our TaqMan™ detection kits offer many of the same features as our lyophilized MicroSEQ and RapidFinder pathogen detection kits, including inclusion of an internal amplification control to minimize false negative interpretations and universal standard cycling conditions. They are provided in solution with enzyme, primer and probe sets provided in separate tubes. The growing portfolio includes kits for detection of:

- *Campylobacter (jejuni, lari, coli)* multiplex
- *Cronobacter sakazakii*
- Enterobacteriaceae 8-Genus*
- *Enterococcus* spp.
- *Escherichia coli* spp.
- *Oncorhynchus keta*
- *Salmonella* spp. ultimate
- *Salmonella* Heidelberg
- *Salmonella* spp. & *S. Enteritidis* multiplex
- *Salmonella* Typhimurium
- STX1/STX2 multiplex
- *Vibrio (cholerae, vulnificus, parahaemolyticus)* multiplex
- Verotoxin-producing *E.coli* VT1/VT2 multiplex
- STEC screening, ISO
- STEC O45 & O121, ISO
- STEC O26, O103 & O145, ISO
- STEC O111 & O104, ISO
- STEC O103 & O145, MLG
- STEC O26 & O111, MLG
- STEC O45 & O121, MLG
- STEC STX & EAE, MLG



* genera included: Citrobacter, Yokenella, Raoultella, Salmonella, Klebsiella, Escherichia, Shigella and Enterobacter



References

Balachandran P, Friberg M et. al. (2012) Rapid Detection of *Salmonella* in Pet Food: Design and Evaluation of Integrated Methods Based on Real-Time PCR Detection. *Journal of Food Protection* 75, 2: 347–352

Find out more at thermofisher.com/foodsafety

For testing of Food and Environmental samples only.

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