

## Methods for Rapid Testing of Produce, Water, and Other Media

Testing for foodborne pathogens is an important element of the many food safety practices in the produce agricultural industry. The Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens (CSFSG) provide guidance that enhances the safe growing, processing, distribution, and handling of lettuce and leafy green commodities from the field to the end user. These guidelines include quantitative microbiological measurements for water quality, soil amendments, soil conditions, and product testing. This document provides information on microbiological testing products that are on the market today, descriptions of the methodologies utilized by these test products, and the companies that produce and market them.<sup>1</sup>



In recent years new technologies have shortened the time between processing microbial samples and getting the results. These technologies, often referred to as “rapid testing,” not only offer quick results, but often claim to be more sensitive and specific by quantifying, detecting, and identifying pathogens. Traditional testing methods for foodborne bacteria require several days to get results. A majority of the new rapid testing technologies still involve culturing (growing) the bacteria, but require an incubation time ranging of 16-24 hours depending on the microbe. However, with renewed research and

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<sup>1</sup> Listing of a product does not signify endorsement of the product by Western Growers Association or the Leafy Green Marketing Association. Products were identified by searching the analytical microbiology literature and the internet. It is possible that additional technologies are available that may not be included in this document. This document is for informational purposes only.

development efforts within the diagnostics industry, a few of the newest technologies have eliminated the cultivation step—and have greatly reduced the time for results.



## Methodologies

In general, rapid testing methods are smaller-scaled or miniaturized, packaged and sold in complete kits, and less hands-on with more automation than the older, conventional test methods. In other words, rapid testing methods have been slightly modified to obtain quicker results.

Testing methods exploit unique characteristics of bacteria, such as antigens, enzymes, and DNA, to detect and identify the specific type or species. The more precise the testing method is for a specific bacterium, the higher the *specificity* of the product, which is often represented by a percentage (the specificity refers to the testing methods ability to differentiate between two different types of microbes). The *sensitivity* of a test relates to the test's ability to detect the bacteria if it is present and is also represented by a percentage (the sensitivity refers to a testing methods ability to find very small amounts of a microbe).

## ELISA

Antibodies recognize specific targets (called antigens) on specific types of bacteria, similar to how a key fits a particular lock. This unique characteristic of detecting, identifying, and isolating bacteria is sometimes exploited by assays such as Enzyme-Linked ImmunoSorbent Assay (ELISA), also known as enzyme immunoassay (EIA) or latex agglutination. Isolating bacteria using ELISA generally involves an additional technology, most often attaching magnetic beads to the antibodies, which are then used to separate the beads from the rest of the sample.

## ***Latex Agglutination***

In latex agglutination assays, a sample is mixed with latex beads coated with a specific antibody or antigen. If the bacterium of interest is present, the latex beads will agglutinate or clump together. Some test kits using these methods may be used in-house with minimal specialized equipment or dedicated laboratory space. Most tests require an incubator and waterbath; however, most quantification techniques require specific instruments, equipment, and dedicated laboratory space.

## ***Biochemical Characteristics***

Technologies based on biochemical characteristics (such as enzymatic cleavage) exploit enzymes that are specific to a particular type of bacteria. For instance *E. coli* uses an enzyme called  $\beta$ -glucuronidase to convert nutrients sources into energy. Most non-coliforms do not have  $\beta$ -glucuronidase and are therefore unable to grow and interfere with the test results. The media base for these tests include a substrate for  $\beta$ -glucuronidase that produces fluorescence and/or a color change when the substrate is cleaved thus indicating that *E. coli* is present. Many of these assays are easy to use and require little additional equipment.

## ***PCR***

The polymerase chain reaction (PCR) is an assay that makes multiple copies of a particular segment of DNA to produce enough of a DNA strand to test. The DNA of interest can be a unique portion of DNA belonging to a specific bacterium such as *E. coli* O157:H7 or *Salmonella*. Some types of instruments using PCR quantifies and identifies the presence of bacteria, requiring special laboratory equipment and a designated laboratory space.



## ***DNA Hybridization***



In addition to PCR, another technology that exploits unique segments of a bacterium's genetic material is DNA hybridization (sometimes called nucleic acid hybridization). DNA hybridization follows the same principle as PCR but takes less time and can detect several pathogens at once. And unlike PCR, which can only process one batch of samples (one "run") at a time, DNA hybridization can process multiple sample "runs" at the same time. This assay requires expensive equipment and dedicated laboratory space due to the sample's susceptibility of being contaminated with foreign DNA.

## ***Phenotype Microarrays***

Phenotype microarrays use the characteristics of a microbe to produce a "fingerprint" based on the microbe's unique metabolism, which is generally made up of specific genes and environmental influences. Microarray technology is a high-throughput technology capable of screening for thousands of cellular functions one process at a time. The metabolic "fingerprint" of a test solution produced by the microarray is then compared to other known or defined microarrays to find specific and unknown microbes. In a test solution, the identity of the unknown microbes can be determined by how many of the measured characteristics match the "fingerprint" of the known microbes.

## **Validation**

Many of these products are validated by organizations such as AOAC International and/or other national validation authorities, and have received approval from government agencies such as Health Canada, US Department of Agriculture, or the US Environmental Protection Agency. Some products have not

been validated yet, but are in the process, while other products have been put on the market without seeking validation.

The AOAC uses two method validation programs to validate proprietary methods such as test kits<sup>2</sup>:

- The *Official Method of Analysis*<sup>SM</sup> Program – a multi-laboratory validation where the highest degree of performance is required to generate credible, defensible, and reproducible results.
- The *Performance Tested*<sup>SM</sup> Method - an independent laboratory validation of performance where rapid validation with some degree of confidence is needed; administered by AOAC Research Institute, a subsidiary of AOAC International.



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<sup>2</sup> From AOAC website: <http://www.aoac.org/vmeth/page1.htm>

Table 1. Methods for rapid testing of produce, water, and other media

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	Validation	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
KPL - BacTrace™ <a href="http://www.kpl.com/home.cfm">http://www.kpl.com/home.cfm</a> 910 Clopper Road Gaithersburg, Maryland 20878 Phone: 800-638-3167 <a href="http://www.kpl.com/catalog/categories.cfm?Catalog_ID=17&amp;Category_ID=415">http://www.kpl.com/catalog/categories.cfm?Catalog_ID=17&amp;Category_ID=415</a>	<a href="#">Antibody - ELISA</a>	N/A		<i>Salmonella</i> , <i>E. coli</i> O157:H7	\$275/mg		Designed for laboratory use; company only markets the antibodies; need all other ELISA equipment			
Hanson Technologies - Biosensors <a href="http://www.hansontechnologies.com/html/1,1128,Products,00.html">http://www.hansontechnologies.com/html/1,1128,Products,00.html</a> Hanson Technologies, Inc. 400 West North Street Carlisle, PA 17013 Phone: 717-245-9890 Fax: 717-245-9151	<a href="#">Antibody</a>	2 hrs	Food, Water	<i>E.coli</i> , <i>Salmonella</i> , O157:H7			Designed for laboratory use	X	X	N/A
BioControl - Assurance EIA® & Assurance Gold EIA® <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.rapidmethods.com/products/assehec.html">http://www.rapidmethods.com/products/assehec.html</a> & <a href="http://www.rapidmethods.com/products/asssal.html">http://www.rapidmethods.com/products/asssal.html</a>	<a href="#">Antibody - ELISA</a>	18-28 hrs. (additional 24 hrs for raw)	Food, environmental	<i>E. coli</i> O157 incl. H7, <i>Salmonella</i>		AOAC Official Method 996.10 ( <i>E. coli</i> ) and 992.11 ( <i>Salmonella</i> )	In-house for P/A determination; requires plate reader for quantification			P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
BioControl - Transia® Plate <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.rapidmethods.com/pdf/SL_Plate%20Ecoli%20O157(1).pdf">http://www.rapidmethods.com/pdf/SL_Plate%20Ecoli%20O157(1).pdf</a>	<a href="#">Antibody - ELISA</a>	17-24 hrs	Food, water, environmental	<i>E. coli</i> O157		AOAC-RI	Designed for laboratory use		X	
BioControl Transia® Plate Salmonella Gold <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.rapidmethods.com/products/TransiaPlateSalmonellaGold.html">http://www.rapidmethods.com/products/TransiaPlateSalmonellaGold.html</a>	<a href="#">Antibody - ELISA</a>	36 hrs	Food	<i>Salmonella</i>		AFAQ, AFNOR, AOAC-RI	Designed for laboratory use			
BioControl - Transia® Plate Verotoxin <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.rapidmethods.com/products/TransiaPlateVerotoxins.html">http://www.rapidmethods.com/products/TransiaPlateVerotoxins.html</a>	<a href="#">Antibody - ELISA</a>	~24 hrs	Food, water, environmental	<i>E. coli</i>			Designed for laboratory use			
Bioline - OPTIMA <a href="http://www.bioline.dk/">http://www.bioline.dk/</a> Bioline ApS Fredericiavej 414 DK-7080 Børkop Denmark Phone: 76 62 07 09	<a href="#">Antibody - ELISA</a>	40 hrs	Food, water	<i>Salmonella</i>		AOAC-R1, AFNOR	Designed for laboratory use			

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	Validation	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Bioline- PREMIA <a href="http://www.bioline.dk/">http://www.bioline.dk/</a> Bioline ApS Fredericiavej 414 DK-7080 Børkop Denmark Phone: 76 62 07 09 <a href="http://www.bioline.dk/methods.htm">http://www.bioline.dk/methods.htm</a>	<a href="#">Antibody - ELISA</a>	18 hrs	Food, water	<i>Salmonella</i>			Designed for laboratory use		X	
Bioline – SELECTA <a href="http://www.bioline.dk/">http://www.bioline.dk/</a> Bioline ApS Fredericiavej 414 DK-7080 Børkop Denmark Phone: 76 62 07 09 <a href="http://www.bioline.dk/methods.htm">http://www.bioline.dk/methods.htm</a>	<a href="#">Antibody - ELISA</a>	24 hrs	Food, water	<i>Salmonella</i>		AFNOR	Designed for laboratory use			
bioMérieux - VIDAS <a href="http://www.biomerieux-industry.com/servlet/srt/bio/industry-microbiology/dynPage?doc=NDY_1ND_FDA_PRD_G_PRD_NDY_5">http://www.biomerieux-industry.com/servlet/srt/bio/industry-microbiology/dynPage?doc=NDY_1ND_FDA_PRD_G_PRD_NDY_5</a> Phone: 800-634-7656, prompt 6, 5201 <a href="mailto:matt.vuyksteke@na.biomerieux.com">matt.vuyksteke@na.biomerieux.com</a>	<a href="#">Antibody - ELISA</a>	18-24 hrs	Food, water, environmental	<i>E. coli</i> O157, <i>Salmonella</i>	12 tests: \$34,311; 30 tests: \$65,291	AFNOR, AOAC-RI	Designed for laboratory use		X	P/A
TECRA E. Coli O157:H7 Via™ <a href="http://www.tecra.net/products/e_coli_o157">http://www.tecra.net/products/e_coli_o157</a> 13 Rodborough Road, Frenchs Forest NSW 2086 Australia Phone: 61 2 8977 3000	<a href="#">Antibody - ELISA</a>	20 hrs	Food, food-related, environmental	<i>E. coli</i> O157 including H7		AOAC – RI, Health Canada	Designed for laboratory use		X	

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<u>Validation</u>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
TECRA Salmonella Via™ <a href="http://www.tecra.net/product_range/rapid_pathogen_testing/Salmonella/Salmonella_visual_immunoassay_via">http://www.tecra.net/product_range/rapid_pathogen_testing/Salmonella/Salmonella_visual_immunoassay_via</a> 13 Rodborough Road, Frenchs Forest NSW 2086 Australia Phone: 61 2 8977 3000	<a href="#">Antibody - ELISA</a>	42 hrs	Food, food-related, environmental	<i>Salmonella</i>		AOAC, USDA, US FDA, Health Canada, AFNOR	Designed for laboratory use			
TECRA Salmonella Ultima™ <a href="http://www.tecra.net/about_tecra">http://www.tecra.net/about_tecra</a> 13 Rodborough Road, Frenchs Forest NSW 2086 Australia Phone: 61 2 8977 3000 <a href="http://www.tecra.net/product_range/rapid_pathogen_testing/salmonella/salult_detailed">http://www.tecra.net/product_range/rapid_pathogen_testing/salmonella/salult_detailed</a>	<a href="#">Antibody - ELISA</a>	36 hrs	Food, food-related, environmental	<i>Salmonella</i>		AOAC, AFNOR	Designed for laboratory use			
Biocontrol - 1-2 Test <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.biocontrolsys.com/products/1-2test.html">http://www.biocontrolsys.com/products/1-2test.html</a> and <a href="http://www.biocontrolsys.com/pdf/1-2_brochure.pdf">http://www.biocontrolsys.com/pdf/1-2_brochure.pdf</a>	<a href="#">Antibody - Immunoassay</a>	14 hrs post cultivation	Food, Environmental	<i>Salmonella</i>		AOAC Official Method 989.13	In-house; Single use tests read visually; minimal equipment required			P/A
BioControl – VIP <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.rapidmethods.com/pdf/VIP_salm_brochure.pdf">http://www.rapidmethods.com/pdf/VIP_salm_brochure.pdf</a>	<a href="#">Antibody - Immunoassay</a>	8-18 hrs; ~48 hours for raw foods	Raw & processed foods	<i>E. coli</i> O157:H7, <i>Salmonella</i>		AOAC Official Method 996.09	In-house; Single use tests read visually; minimal equipment required		X	P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	Validation	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
EMD - Singlepath <a href="http://www.emdchemicals.com/nSearch/SearchCatalog.aspx?searchFor=singlepath">http://www.emdchemicals.com/nSearch/SearchCatalog.aspx?searchFor=singlepath</a> 480 S. Democrat Road Gibbstown, NJ 08027 Phone: 800-222-0342 or 856-423-6300 <a href="http://www.emdchemicals.com/analytics/literature/031021_singlepath_salmonella.pdf">http://www.emdchemicals.com/analytics/literature/031021_singlepath_salmonella.pdf</a> and <a href="http://www.emdchemicals.com/analytics/literature/031019_singlepath_ecoli.pdf">http://www.emdchemicals.com/analytics/literature/031019_singlepath_ecoli.pdf</a>	<a href="#">Antibody - Immunoassay</a>	Salmonella ~42 hrs; E. coli 18-24 hrs.	Food	<i>E. coli</i> O157, <i>Salmonella</i>	\$296.12/25 tests	AOAC-RI	In-house; Single use tests read visually; minimal equipment required		X	P/A
EMD - Duopath® Verotoxin <a href="http://www.emdchemicals.com/nSearch/DisplayLit.aspx?lt=analytics/literature/031023_duopath_verotoxins_orig.htm">http://www.emdchemicals.com/nSearch/DisplayLit.aspx?lt=analytics/literature/031023_duopath_verotoxins_orig.htm</a> 480 S. Democrat Road Gibbstown, NJ 08027 Phone: 800-222-0342 or 856-423-6300	<a href="#">Antibody - Immunoassay</a>	42+ hrs	Food	<i>E. coli</i> O157	\$412/25 tests	AOAC-RI	In-house; Single use tests read visually; minimal equipment required			P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<u>Validation</u>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Meridian - ImmunoCardSTAT® <a href="http://www.meridianbioscience.com/">http://www.meridianbioscience.com/</a> 3471 River Hills Drive Cincinnati, OH 45244 Phone: 800-543-1980 <a href="http://www.meridianbioscience.com/product/productCatalog.jsp?content=body_content_prd_specific.jsp&amp;topContentBar=body_top_prd_specific.jsp&amp;catItem=750530">http://www.meridianbioscience.com/product/productCatalog.jsp?content=body_content_prd_specific.jsp&amp;topContentBar=body_top_prd_specific.jsp&amp;catItem=750530</a>	<a href="#">Antibody - Immunoassay</a>	24+ hrs	Food	<i>E. coli</i> & <i>E. coli</i> O157			In-house; Single use tests read visually; minimal equipment required			P/A
Neogen - Reveal® for <i>E. coli</i> O157:H7 <a href="http://www.neogen.com/FoodSafety/R_Index.html">http://www.neogen.com/FoodSafety/R_Index.html</a> 620 Leshar Place Lansing, MI 48912 USA Phone: 800-234-5333 <a href="http://www.neogen.com/FoodSafety/pdf/ProdInfo/Page_42.pdf">http://www.neogen.com/FoodSafety/pdf/ProdInfo/Page_42.pdf</a>	<a href="#">Antibody - Immunoassay</a>	8 or 20 hrs & 15 minutes	Food	<i>E. coli</i> O157:H7		AOAC	In-house; Single use tests read visually; minimal equipment required		X	P/A
Neogen - Reveal® for <i>Salmonella</i> enteritidis <a href="http://www.neogen.com/FoodSafety/R_Index.html">http://www.neogen.com/FoodSafety/R_Index.html</a> 620 Leshar Place Lansing, MI 48912 USA Phone: 800-234-5333 <a href="http://www.neogen.com/FoodSafety/pdf/ProdInfo/Page_55.pdf">http://www.neogen.com/FoodSafety/pdf/ProdInfo/Page_55.pdf</a>	<a href="#">Antibody - Immunoassay</a>	48 hrs requires cultivation	Food	<i>Salmonella</i>		AOAC	In-house; Single use tests read visually; minimal equipment required			P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	Validation	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Neogen - Reveal® for Salmonella <a href="http://www.neogen.com/FoodSafety/R_Index.html">http://www.neogen.com/FoodSafety/R_Index.html</a> 620 Leshler Place Lansing, MI 48912 USA Phone: 800-234-5333 <a href="http://www.neogen.com/FoodSafety/pdf/ProdInfo/Page_51.pdf">http://www.neogen.com/FoodSafety/pdf/ProdInfo/Page_51.pdf</a>	<a href="#">Antibody - Immunoassay</a>	~21 hrs	Food	<i>Salmonella</i>		AOAC	In-house; Single use tests read visually; minimal equipment required		X	P/A
New Horizons - SMART™-II E. coli Food Test <a href="http://www.nhdiag.com/index.htm">http://www.nhdiag.com/index.htm</a> 9110 Red Branch Road Columbia, MD 21045 Phone: 410-992-9357 x235 or 232 Fax: 410-992-0328 E: <a href="mailto:nhdiag@aol.com">nhdiag@aol.com</a> <a href="http://www.nhdiag.com/ecoli.shtml">http://www.nhdiag.com/ecoli.shtml</a>	<a href="#">Antibody - Immunoassay</a>	N/A	Food	<i>E. coli</i>			In-house; Single use tests read visually; minimal equipment required			
New Horizons - SMART™-II Salmonella Food Test <a href="http://www.nhdiag.com/index.htm">http://www.nhdiag.com/index.htm</a> 9110 Red Branch Road Columbia, MD 21045 Phone: 410-992-9357 x235 or 232 Fax: 410-992-0328 E: <a href="mailto:nhdiag@aol.com">nhdiag@aol.com</a> <a href="http://www.nhdiag.com/salm.shtml">http://www.nhdiag.com/salm.shtml</a>	<a href="#">Antibody - Immunoassay</a>	N/A	Food	<i>Salmonella</i>			In-house; Single use tests read visually; minimal equipment required			TM

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
BioControl - Transia® <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.biocontrolsys.com/products/index.html">http://www.biocontrolsys.com/products/index.html</a>	<a href="#">Antibody - Immunoassay</a>	<i>E.coli</i> : 17-24 hrs; <i>Salmonella</i> ~45 hrs. requires cultivation	Food, Water, Environment	<i>E. coli</i> O157, <i>Salmonella</i>		AOAC-RI	In-house; Single use tests read visually; minimal equipment required		X	P/A
Strategic Diagnostics - RapidChek® for <i>E. Coli</i> O157:H7 <a href="http://www.sdix.com/">http://www.sdix.com/</a> 111 Pencader Dr. Newark, DE 19702 Phone: 800-544-8881 <a href="http://www.sdix.com/PDF/Products/51447_ecoli_rev1_3.23.07.pdf">http://www.sdix.com/PDF/Products/51447_ecoli_rev1_3.23.07.pdf</a>	<a href="#">Antibody - Immunoassay</a>	8-18 hrs	Food	<i>E. coli</i> O157:H7		Has not been validated for produce testing	In-house; Single use tests read visually; minimal equipment required		X	
Strategic Diagnostics - RapidChek® & RapidChek® SELECT for <i>Salmonella</i> <a href="http://www.sdix.com/">http://www.sdix.com/</a> 111 Pencader Dr. Newark, DE 19702 Phone: 800-544-8881 <a href="http://www.sdix.com/PDF/Products/Salmonella%20Profile%20Jan2007.pdf">http://www.sdix.com/PDF/Products/Salmonella%20Profile%20Jan2007.pdf</a> and <a href="http://www.sdix.com/PDF/Products/51447_select_salmonella_rev3_4.2.07.pdf">http://www.sdix.com/PDF/Products/51447_select_salmonella_rev3_4.2.07.pdf</a>	<a href="#">Antibody - Immunoassay</a>	24-48 hrs	Food	<i>Salmonella</i>		Has not been validated for produce testing	In-house; Single use tests read visually; minimal equipment required		TM	

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
DuPont - Qualicon Lateral Flow System <a href="http://www2.dupont.com/Qualicon/en_US/">http://www2.dupont.com/Qualicon/en_US/</a> United States DuPont Qualicon ESL Building 400, PO Box 80400 Wilmington, DE 19880-0400 USA Phone: 800-863-6842 or 302-695-5300 Fax: 302-695-5301	<a href="#">Antibody - Immunoassay</a>	18 hrs	Food	<i>Salmonella</i> , <i>E. coli</i> O157 (including O157:H7)		AOAC-RI	In-house; read visually; minimal equipment required		X	P/A
TECRA Salmonella Unique™ <a href="http://www.tecra.net/about_tecra">http://www.tecra.net/about_tecra</a> 13 Rodborough Road, Frenchs Forest NSW 2086 Australia Phone: 61 2 8977 3000 <a href="http://www.tecra.net/product_range/rapid_pathogen_testing/Salmonella/unique_Salmonella">http://www.tecra.net/product_range/rapid_pathogen_testing/Salmonella/unique_Salmonella</a>	<a href="#">Antibody - Immunoassay</a>	21-24 hrs	Food, food-related, environmental	<i>Salmonella</i>		AFNOR, EMMAS	In house usable with minimal laboratory equipment required		X	
VICAM Screen <a href="http://www.vicam.com/products/Salmonella-verify.html">http://www.vicam.com/products/Salmonella-verify.html</a> VICAM 313 Pleasant Street Watertown, MA 02472 USA	<a href="#">Antibody coated magnetic beads and plating</a>	16-22 hours	Food	<i>Salmonella</i>			Designed for laboratory use		X	P/A
Matrix MicroScience – Pathatrix <a href="http://www.matrixmsci.com/">http://www.matrixmsci.com/</a> 400 Corporate Circle, Ste D. Golden, CO 80401 Phone: 303-277-9613 Fax: 303-277-9643	<a href="#">Antibody coated paramagnetic particles</a>	7 hrs	Food	<i>E. coli</i> O157:H7, <i>Salmonella</i> ,		AOAC-RI	Designed for laboratory use	X		

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
B2P – ColiQuik™ & Watercheck™ <a href="http://www.b2ptesting.com.au/">http://www.b2ptesting.com.au/</a> PO Box 856, St Ives NSW, Australia Phone: 61 1300 785 614	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	11+ hrs	Water	Coliforms, <i>E.coli</i>			In-house; read visually; minimal equipment required	X	X	P/A
B2P – Foodcheck™ <a href="http://www.b2ptesting.com.au/">http://www.b2ptesting.com.au/</a> PO Box 856, St Ives NSW, Australia Phone: 61 1300 785 614	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	12+ hours	Food	Coliforms, <i>E.coli</i>			In-house; read visually; minimal equipment required	X	X	P/A
bioMerieux – O157:H7 ID Agar <a href="http://www.biomerieux-industry.com/">http://www.biomerieux-industry.com/</a> Phone: 800-634-7656, prompt 6, 5201 <a href="mailto:matt.vuylsteke@na.biomerieux.com">matt.vuylsteke@na.biomerieux.com</a> <a href="http://industry.biomerieux-usa.com/industry/food/media/O157.htm">http://industry.biomerieux-usa.com/industry/food/media/O157.htm</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	24+ hrs	Food	<i>E. coli</i> O157:H7			In-house; read visually; minimal equipment required for P/A assessment			P/A or MPN
bioMerieux – SM ID2 Agar <a href="http://www.biomerieux-industry.com/">http://www.biomerieux-industry.com/</a> Phone: 800-634-7656, prompt 6, 5201 <a href="mailto:matt.vuylsteke@na.biomerieux.com">matt.vuylsteke@na.biomerieux.com</a> <a href="http://industry.biomerieux-usa.com/industry/food/media/smid2agar.htm">http://industry.biomerieux-usa.com/industry/food/media/smid2agar.htm</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	18-24 hrs	Food	<i>Salmonella</i>			In-house; read visually; minimal equipment required for P/A assessment		X	P/A or MPN

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<u>Validation</u>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
BD BBL™ CHROMagar™ O157 <a href="http://www.bd.com/">http://www.bd.com/</a> 1 Becton Dr. Franklin Lakes, NJ 07417 Phone: 877-362-2700 <a href="http://www.bd.com/ds/productCenter/214984.asp">http://www.bd.com/ds/productCenter/214984.asp</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	48+ hrs	Food, environmental	<i>E. coli</i> O157:H7		AOAC-RI for apple cider & raw meat	In-house; read visually; minimal equipment required			P/A or MPN
BD BBL™ CHROMagar™ Salmonella <a href="http://www.bd.com/">http://www.bd.com/</a> 1 Becton Dr. Franklin Lakes, NJ 07417 Phone: 877-362-2700 <a href="http://www.bd.com/ds/productCenter/214984.asp">http://www.bd.com/ds/productCenter/214984.asp</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	60-96 hrs	Food, environmental	<i>Salmonella</i>		AOAC-RI for lettuce	In-house; read visually; minimal equipment required			P/A or MPN
Idexx Colisure® <a href="http://www.idexx.com/water/colisure/">http://www.idexx.com/water/colisure/</a> One IDEXX Drive Westbrook, ME 04092 Phone: 800-321-0207 <a href="http://www.idexx.com/water/colisure/">http://www.idexx.com/water/colisure/</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	24-48 hrs	Water	<i>E. coli</i> , coliform		EPA approved	In-house; read visually; minimal equipment required for P/A assessment	X		P/A or MPN

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	Validation	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Idexx Coliert® & Coli-18® <a href="http://www.idexx.com/water/colisur/e/">http://www.idexx.com/water/colisur/e/</a> One IDEXX Drive Westbrook, ME 04092 Phone: 800-321-0207 <a href="http://www.idexx.com/water/colilert/">http://www.idexx.com/water/colilert/</a> and <a href="http://www.idexx.com/water/colilert18/">http://www.idexx.com/water/colilert18/</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	24 & 18 hrs	Water	<i>E. coli</i> , coliform		AOAC, EPA approved	In-house; read visually; minimal equipment required for P/A assessment	X	X	P/A or MPN
Remel BactiCard® <a href="http://www.remelinc.com/">http://www.remelinc.com/</a> 12076 Santa Fe Dr., Lenexa, KS 66215 Phone: 800-255-6730 <a href="http://www.remelinc.com/order/ShowItems.cfm?ItemName=BactiCard%3Csup%3E%26reg%3B%3C%2Fsup%3E%20E%2E%20coli&amp;Section=Diagnostic%20Tests">http://www.remelinc.com/order/ShowItems.cfm?ItemName=BactiCard%3Csup%3E%26reg%3B%3C%2Fsup%3E%20E%2E%20coli&amp;Section=Diagnostic%20Tests</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	N/A	N/A	<i>E. coli</i>		AOAC	N/A			P/A
Biolife – Chromogenic <i>E. coli</i> O157 Agar <a href="http://www.biolifeit.com">www.biolifeit.com</a> Biolife Italiana S.r.l Viale Monza 272 – 20128 Milano, IT Phone: 02-252091 <a href="http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-405581-CHROM.%20E.COLI%200157%20AG..pdf?openelement">http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-405581-CHROM.%20E.COLI%200157%20AG..pdf?openelement</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	~24 hrs	Food, water	<i>E. coli</i> O157			In-house with minimal equipment required			P/A and MPN

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	Validation	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Biolife – Chromogenic Salmonella Agar <a href="http://www.biolifeit.com">www.biolifeit.com</a> Biolife Italiana S.r.l Viale Monza 272 – 20128 Milano, IT Phone: 02-252091 <a href="http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-405350-CHROM.SALMONELLA%20AG.B ASE.pdf?openelement">http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-405350-CHROM.SALMONELLA%20AG.B ASE.pdf?openelement</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	48+ hrs	Food, environmental	<i>Salmonella</i>			In-house with minimal equipment required			P/A and MPN
Biolife – Tryptone Bile X-GLUC Agar <a href="http://www.biolifeit.com">www.biolifeit.com</a> Biolife Italiana S.r.l Viale Monza 272 – 20128 Milano, IT Phone: 02-252091	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	18-24 hrs	Food	<i>E. coli</i>			In-house with minimal equipment required			P/A and MPN
BioRad – RAPID' <i>Salmonella</i> Medium <a href="http://www.bio-rad.com/">http://www.bio-rad.com/</a> Hercules, CA 94547 Phone: 510-724-7000 Fax: 510-741-5815	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	48+ hrs	Food	<i>Salmonella</i>		AFNOR		X		MPN

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Biolife – EC X-GLUC Agar <a href="http://www.biolifeit.com">www.biolifeit.com</a> Biolife Italiana S.r.l Viale Monza 272 – 20128 Milano, IT Phone: 02-252091 <a href="http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-401968-EC%20X%20GLUC%20AGAR.pdf?openelement">http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-401968-EC%20X%20GLUC%20AGAR.pdf?openelement</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	~24 hrs	Food, water	<i>E. coli</i>			In-house with minimal equipment required			P/A and MPN
Biolife – MUCAP Test® <a href="http://www.biolifeit.com">www.biolifeit.com</a> Biolife Italiana S.r.l Viale Monza 272 – 20128 Milano, IT Phone: 02-252091 <a href="http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-191500-MUCAP%20TEST.pdf?openelement">http://www.biolifeit.com/biolife/biolife.nsf\$files/TS-191500-MUCAP%20TEST.pdf?openelement</a>	<a href="#">Biochemical: Cleavage by organism specific enzyme</a>	>24 hrs	Any	<i>Salmonella</i>			In-house with minimal equipment required; requires UV light source such as a Wood's lamp			P/A
BioControl – ColiComplete <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.biocontrolsys.com/products/colicomplete.html">http://www.biocontrolsys.com/products/colicomplete.html</a>	<a href="#">Biochemical: Cleavage by organism specific enzymes</a>	28-48 hrs	Food, environmental	Coliforms, <i>E. coli</i>		AOAC Official Method 992.30	In-house; read visually; minimal equipment required	X		P/A or MPN

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
BioRad – MU/EC & MU/SF Microplates – Fluorogenic tests <a href="http://www.bio-rad.com/">http://www.bio-rad.com/</a> Hercules, CA 94547 Phone: 510-724-7000 Fax: 510-741-5815	<a href="#">Biochemical: Cleavage by organism specific enzymes</a>	36+ hrs	Water	Coliforms, <i>E. coli</i>			Designed for laboratory use			MPN
Pathogen Detection Systems <a href="http://www.pathogendetect.com/">http://www.pathogendetect.com/</a> Suite 1619, Biosciences Complex 116 Barrie Street Kingston, ON Canada K7L 3N6 Ph. 613-533-3321 Fax. 613-533-3317 <a href="mailto:info@pathogendetect.com">info@pathogendetect.com</a>	<a href="#">Biochemical: Cleavage by organism specific enzymes</a>	6-16 hours	Water	<i>E.coli</i> , coliforms,			In house; fully automated desktop analysis	X	X	P/A
BioRad – TTC-Tergitol 7 Medium <a href="http://www.bio-rad.com/">http://www.bio-rad.com/</a> Hercules, CA 94547 Phone: 510-724-7000 Fax: 510-741-5815	<a href="#">Biochemical: Cleavage by organism specific enzymes</a>	24-48 hrs	Water	Coliforms, <i>E. coli</i>			In-house; read visually; minimal equipment required			MPN
BioRad – TBX Medium <a href="http://www.bio-rad.com/">http://www.bio-rad.com/</a> Hercules, CA 94547 Phone: 510-724-7000 Fax: 510-741-5815	<a href="#">Biochemical: Cleavage by organism specific enzymes</a>	18-24 hrs	Food	<i>E. coli</i>			In-house; read visually; minimal equipment required			P/A and MPN

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
BioRad – XLD Medium <a href="http://www.bio-rad.com/">http://www.bio-rad.com/</a> Hercules, CA 94547 Phone: 510-724-7000 Fax: 510-741-5815	<a href="#">Biochemical: Cleavage by organism specific enzymes</a>	48-72 hrs	Food	<i>Salmonella</i>			In-house; read visually; minimal equipment required			P/A and MPN
BioControl - Colitrak Plus <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.biocontrolsys.com/pdf/colibrochure_web.pdf">http://www.biocontrolsys.com/pdf/colibrochure_web.pdf</a>	<a href="#">Biochemical: Cleavage by organism specific enzymes and gas formation</a>	28 hrs	Food, water, environmental	Coliforms, <i>E. coli</i>				X		P/A or MPN
DuPont - Qualicon RiboPrinter® System <a href="http://www2.dupont.com/Qualicon/en_US/">http://www2.dupont.com/Qualicon/en_US/</a> United States DuPont Qualicon ESL Building 400, PO Box 80400 Wilmington, DE 19880-0400 USA Phone: 800-863-6842 or 302-695-5300 Fax: 302-695-5301 <a href="http://www2.dupont.com/Qualicon/en_US/products/RiboPrinter_System/index.html">http://www2.dupont.com/Qualicon/en_US/products/RiboPrinter_System/index.html</a>	<a href="#">DNA hybridization</a>	8 hrs	Food, water, environmental	<i>Salmonella</i> , <i>E. coli</i>			Designed for laboratory use	X	X	

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Neogen - GeneQuence® <a href="http://www.neogen.com/FoodSafety/GQ_Index.html">http://www.neogen.com/FoodSafety/GQ_Index.html</a> 620 Leshar Place Lansing, MI 48912 USA 800-234-5333	<a href="#">DNA hybridization</a>	2 hrs post cultivation	Food	<i>Salmonella</i>		AOAC Official Methods	In house usable with minimal laboratory equipment required	X		P/A
Neogen - GeneQuence® <a href="http://www.neogen.com/FoodSafety/GQ_Index.html">http://www.neogen.com/FoodSafety/GQ_Index.html</a> 620 Leshar Place Lansing, MI 48912 USA 800-234-5333	<a href="#">DNA hybridization</a>	2 hrs post cultivation	Food	<i>E. coli</i> O157:H7,			In house usable with minimal laboratory equipment required	X	X	P/A
Litmus Rapid B <a href="http://www.litmusgti.com/content/portfolio/litmus_rapid-b.asp">http://www.litmusgti.com/content/portfolio/litmus_rapid-b.asp</a> 9821 Katy Freeway Suite 500 Houston, TX 77024 Phone: 713-464-7770 E: <a href="mailto:info@litmusgti.com">info@litmusgti.com</a>	N/A	Results in <20 minutes	Food	<i>E. coli</i> , <i>E. coli</i> O157:H7, <i>Salmonella</i> ,			Designed for laboratory use	X	X	P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Microgen™ Latex <a href="http://www.microgenbioproducts.com/">http://www.microgenbioproducts.com/</a> Microgen Bioproducts Ltd 1 Admiralty Way Camberley, Surrey GU15 3DT Phone: 44-0-1276-600081 Fax: 44-0-1276-600151 <a href="http://www.microgenbioproducts.com/pdf/Product%20Brochures_Individual/Microgen%20E.%20coli%20Latex.pdf">http://www.microgenbioproducts.com/pdf/Product%20Brochures_Individual/Microgen%20E.%20coli%20Latex.pdf</a> and <a href="http://www.microgenbioproducts.com/pdf/Product%20Brochures_Individual/Microgen%20Salmonella%20Latex.pdf">http://www.microgenbioproducts.com/pdf/Product%20Brochures_Individual/Microgen%20Salmonella%20Latex.pdf</a>	<a href="#">Latex agglutination</a>	2 min post-cultivation	Food	<i>E. coli</i> O157, <i>Salmonella</i>			In-house; read visually; minimal equipment required		X	P/A
Oxoid - Salmonella Latex Kit <a href="http://www.oxoid.com/uk/blue/index.asp">http://www.oxoid.com/uk/blue/index.asp</a> Wade Road Basingstoke, Hampshire RG24 8PW United Kingdom <a href="http://www.oxoid.com/UK/blue/product_detail/prod_detail.asp?pr=FT0203&amp;cat=&amp;c=UK&amp;lang=EN">http://www.oxoid.com/UK/blue/product_detail/prod_detail.asp?pr=FT0203&amp;cat=&amp;c=UK&amp;lang=EN</a>	<a href="#">Latex agglutination</a>	2 min post-culturing	Food, environmental, water	<i>Salmonella</i>		AFNOR, AOAC	In-house; read visually; minimal equipment required		X	P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Pro-Lab Prolex™ <a href="http://www.pro-lab.com/index.php">http://www.pro-lab.com/index.php</a> 9701 Dessau Road, Suite 802 Austin, TX 78754-3941 Toll Free: +1 800 522 7740 (Orders) Phone: 512-832-9145 Toll Free Fax: 800-332-0450	<a href="#">Latex agglutination</a>	2 min post-cultivation	Food, water, environmental	<i>E. coli</i> O157:H7; <i>Salmonella</i>			In-house; read visually; minimal equipment required			P/A
Remel/Oxoid - Dryspot™ E. coli O157 <a href="http://www.remelinc.com/">http://www.remelinc.com/</a> 12076 Santa Fe Dr., Lenexa, KS 66215 Phone: 800-255-6730 <a href="http://www.remelinc.com/order/ShowItems.cfm?ItemName=Dryspot%26trade%3B%20E%2E%20coli%20O157&amp;Section=Diagnostic%20Tests">http://www.remelinc.com/order/ShowItems.cfm?ItemName=Dryspot%26trade%3B%20E%2E%20coli%20O157&amp;Section=Diagnostic%20Tests</a> & <a href="http://www.oxid.com/UK/blue/prod_detail/prod_detail.asp?pr=DR0120&amp;c=UK&amp;lang=EN">http://www.oxid.com/UK/blue/prod_detail/prod_detail.asp?pr=DR0120&amp;c=UK&amp;lang=EN</a>	<a href="#">Latex agglutination</a>	2 min post-cultivation		<i>E. coli</i> O157			In-house; read visually; minimal equipment required			P/A

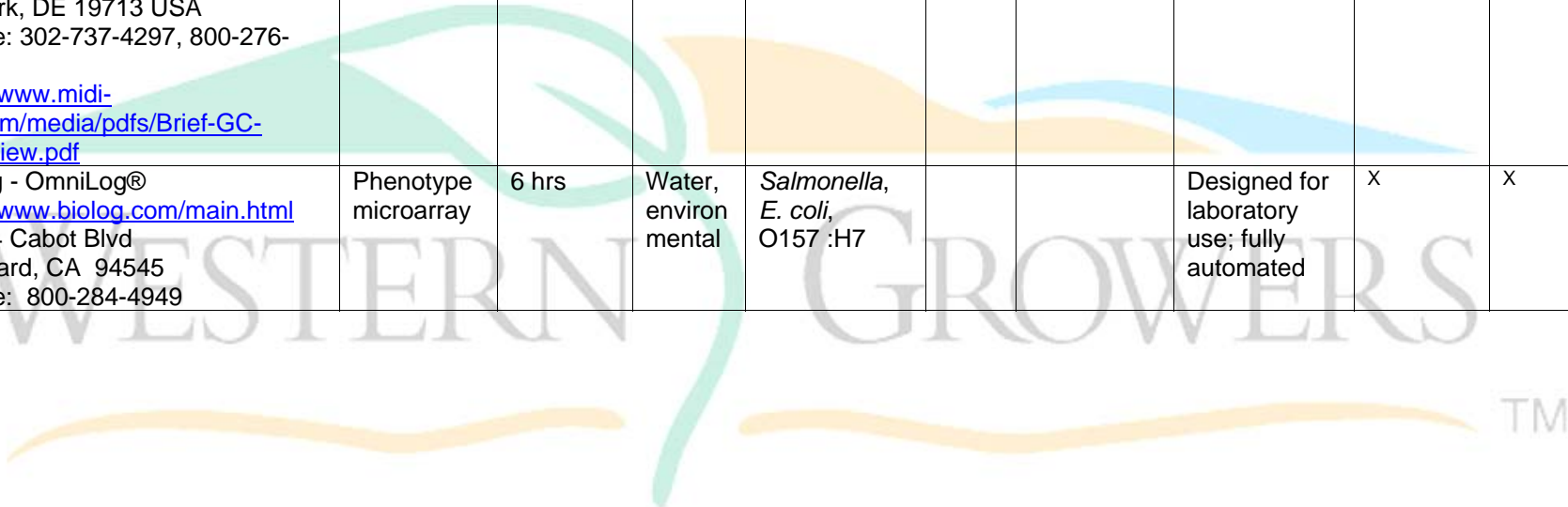
Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Remel/Oxoid E. Coli O157 Latex Test <a href="http://www.remelinc.com/">http://www.remelinc.com/</a> 12076 Santa Fe Dr., Lenexa, KS 66215 Phone: 800-255-6730 <a href="http://www.remelinc.com/order/ShowItems.cfm?ItemName=Escherichia%20coli%20O157%20Latex%20Test&amp;Section=Diagnostic%20Tests">http://www.remelinc.com/order/ShowItems.cfm?ItemName=Escherichia%20coli%20O157%20Latex%20Test&amp;Section=Diagnostic%20Tests</a> & <a href="http://www.oxid.com/UK/blue/product_detail/product_detail.asp?pr=DR0620&amp;c=UK&amp;lang=EN">http://www.oxid.com/UK/blue/product_detail/product_detail.asp?pr=DR0620&amp;c=UK&amp;lang=EN</a>	<a href="#">Latex agglutination</a>	2 min post-cultivation		<i>E. coli</i> O157:H7			In-house; read visually; minimal equipment required			P/A
Remel/Oxoid Wellcolex <a href="http://www.oxid.com">http://www.oxid.com</a> or <a href="http://www.remelinc.com/">http://www.remelinc.com/</a> 12076 Santa Fe Dr., Lenexa, KS 66215 Phone: 800-255-6730 <a href="http://www.oxid.com/UK/blue/press/press.asp?art=Y&amp;pRef=PR0296&amp;c=UK&amp;lang=EN">http://www.oxid.com/UK/blue/press/press.asp?art=Y&amp;pRef=PR0296&amp;c=UK&amp;lang=EN</a>	<a href="#">Latex agglutination</a>	2 min post-cultivation		<i>E. coli</i> O157, <i>E. coli</i> O157:H7, <i>Salmonella</i>			In-house; read visually; minimal equipment required			P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Watersafe Bacteria Kit <a href="http://www.h2okits.com/site/1286521/page/819927">http://www.h2okits.com/site/1286521/page/819927</a> H2OKITS.com Division of A.S.N.F, LLC 430 Rummer Road Marietta, OH 45750 Phone: 888-H2OKITS (426-5487) or 740-336-8669 E-Mail: sales@H2OKITS.com support@H2OKITS.com	N/A	N/A	Water	Coliform bacteria	\$9.95 each		In-house; read visually; minimal equipment required			P/A
BioControl - Assurance GDS <a href="http://www.biocontrolsys.com">www.biocontrolsys.com</a> 12822 SE 32 <sup>nd</sup> St. Bellevue, WA Phone: 425-603-1123 <a href="http://www.biocontrolsys.com/products/gdsecoli.html">http://www.biocontrolsys.com/products/gdsecoli.html</a> and <a href="http://www.rapidmethods.com/products/gdssal.html">http://www.rapidmethods.com/products/gdssal.html</a>	<a href="#">PCR</a>	N/A	Food, environmental	O157:H7, <i>Salmonella</i>		AOAC 2005.04, AOAC-RI	Designed for laboratory use; PCR equipment required	X	X	P/A
BioRad – iQ-Check <i>Salmonella</i> <a href="http://www.bio-rad.com/">http://www.bio-rad.com/</a> Hercules, CA 94547 Phone: 510-724-7000 Fax: 510-741-5815	<a href="#">PCR</a>	N/A	Food, environmental	<i>Salmonella</i>		AFNOR	Designed for laboratory use; PCR equipment required			MPN

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
DuPont - Qualicon Bax® system <a href="http://www2.dupont.com/Qualicon/en_US/">http://www2.dupont.com/Qualicon/en_US/</a> United States DuPont Qualicon ESL Building 400, PO Box 80400 Wilmington, DE 19880-0400 USA Phone: 800-863-6842 or 302-695-5300 Fax: 302-695-5301 <a href="http://www2.dupont.com/Qualicon/en_US/assets/downloads/BAXEcoliproduct.pdf">http://www2.dupont.com/Qualicon/en_US/assets/downloads/BAXEcoliproduct.pdf</a>	<a href="#">PCR</a>	~4 hrs post-cultivation	Food, environmental	<i>Salmonella</i> , <i>E. coli</i> O157:H7		AOAC, Health Canada	Designed for laboratory use; PCR equipment required	X		P/A
Idaho Technology – R.A.P.I.D.®LT <a href="http://www.idahotech.com/rapid/index.html">http://www.idahotech.com/rapid/index.html</a> Idaho Technology Inc. 390 Wakara Way Salt Lake City, Utah 84108, USA Phone: 801-736-6354 Fax: 801-588-0507 Toll Free: 800-735-6544 it@idahotech.com <a href="http://www.idahotech.com/RAPIDLT/RAPIDLT-FSS.html">http://www.idahotech.com/RAPIDLT/RAPIDLT-FSS.html</a>	<a href="#">PCR</a>	~30 min post-cultivation	Food, water	<i>E. coli</i> O157:H7, <i>Salmonella</i>		US DoD, AOAC pending, US EPA-ETV (water)	Designed for laboratory use; PCR equipment required	X	X	P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	Validation	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Roche Lightcycler® & foodproof pathogen testing <a href="https://www.roche-applied-science.com/sis/rtpcr/lightcycler/system.jsp">https://www.roche-applied-science.com/sis/rtpcr/lightcycler/system.jsp</a> 9115 Hague Road P.O. Box 50414 Indianapolis, IN 46250-0414 Phone: 800-262-1640 <a href="https://www.roche-applied-science.com/servlet/RCConfigureUser?URL=StoreFramesetView&amp;storeId=10202&amp;catalogId=10202&amp;langId=-1&amp;countryId=us">https://www.roche-applied-science.com/servlet/RCConfigureUser?URL=StoreFramesetView&amp;storeId=10202&amp;catalogId=10202&amp;langId=-1&amp;countryId=us</a> and <a href="https://www.roche-applied-science.com/servlet/RCConfigureUser?URL=StoreFramesetView&amp;storeId=10202&amp;catalogId=10202&amp;langId=-1&amp;countryId=us">https://www.roche-applied-science.com/servlet/RCConfigureUser?URL=StoreFramesetView&amp;storeId=10202&amp;catalogId=10202&amp;langId=-1&amp;countryId=us</a>	<a href="#">PCR</a>	45 min post-cultivation	Water, food	<i>E. coli</i> O157 including H7, <i>Salmonella</i>	~\$1,000.00 for each pathogen detection kit	AOAC-RI	Designed for laboratory use; PCR equipment required		X	P/A
Biolog - MicroLog™ <a href="http://www.biolog.com/">http://www.biolog.com/</a> 21124 Cabot Blvd Hayward, CA 94545 Phone: 800-284-4949	Phenotype microarray	6 hrs	Water, environmental	<i>Salmonella</i> , <i>E. coli</i> , O157 :H7			Designed for laboratory use; semi-automated	X	X	P/A

Name and Contact Information	Method	Turn Around Time	Media	Organisms	Cost	<a href="#">Validation</a>	In-house usability or Designed for Laboratory Use	Simultaneous Multi Organism	Time < 24 hrs	Test Result
Microbial-ID Sherlock® Microbial Identification System <a href="http://www.midi-inc.com/index.html">http://www.midi-inc.com/index.html</a> MIDI, Inc 125 Sandy Drive Newark, DE 19713 USA Phone: 302-737-4297, 800-276-8068 <a href="http://www.midi-inc.com/media/pdfs/Brief-GC-Overview.pdf">http://www.midi-inc.com/media/pdfs/Brief-GC-Overview.pdf</a>	Phenotype microarray; gas chromatography	10-30 minutes		<i>E. coli</i> O157 including H7, <i>Salmonella</i>		AOAC	Designed for laboratory use			P/A
Biolog - OmniLog® <a href="http://www.biolog.com/main.html">http://www.biolog.com/main.html</a> 21124 Cabot Blvd Hayward, CA 94545 Phone: 800-284-4949	Phenotype microarray	6 hrs	Water, environmental	<i>Salmonella</i> , <i>E. coli</i> , O157:H7			Designed for laboratory use; fully automated	X	X	P/A



## References

- AOAC – Rapid Test Kits: Performance Tested Methods<sup>SM</sup> Microbiological Test Kits (<http://www.aoac.org/testkits/testedmethods.html>)
- Feng, P. 2001. US FDA/CFSAN, Bacterial Analytical Manual Online, Appendix 1 – Rapid Methods for Detecting Foodborne Pathogens. (<http://www.cfsan.fda.gov/~ebam/bam-a1.html#author>)

## Acronyms

AFNOR: Association française de Normalisation – France’s ISO member body and their national organization for standardization

AOAC: Association of Analytical Communities International

AOAC-RI: Association of Analytical Communities - Research Institute

ATP: adenosine triphosphate

CFU: colony forming unit

ELISA: enzyme-linked immunosorbent assay

EMMAS: European Microbiological Methods Assessment Scheme

GC: gas chromatography

N/A: Not available

PCR: polymerase chain reaction

P/A: Presence/absence

US EPA ETV: US Environmental Protection Agency’s Environmental Technology Verification Program

TM