

2011 ISGA Convention

Past, Present, and Future of Neogen Pathogen Testing

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Neogen Corporation

About Neogen



About Neogen

- * Approx. 600 Employees
- * Manufacturing
- * R&D
- * Over 130 Sales and Marketing

About Neogen Testing kits for....

- * Pathogenic bacteria
- * Food allergens
- * Spoilage organisms
- * Sanitation
- * Drug residues
- * Natural toxins

Over the Years!

- * In the past 20 years contaminated bean sprouts, alfalfa sprouts or other varieties have been **blamed** for at least 40 significant outbreaks of foodborne illness across the United States, Canada and Europe.
 - * “Are sprouts safe”
 - * “High risk”
 - * “Pose an inherent problem”

<http://www.foodsafetynews.com/2011/06/are-sprouts-safe-to-eat/>

What can we do!

- * Supply our communities with more information about the benefits of sprouts.
 - * Anyone doing this currently?
- * Support regulations on how sprouts are to be grown and/or how testing is to be done.

Neogen's Timeline of Testing

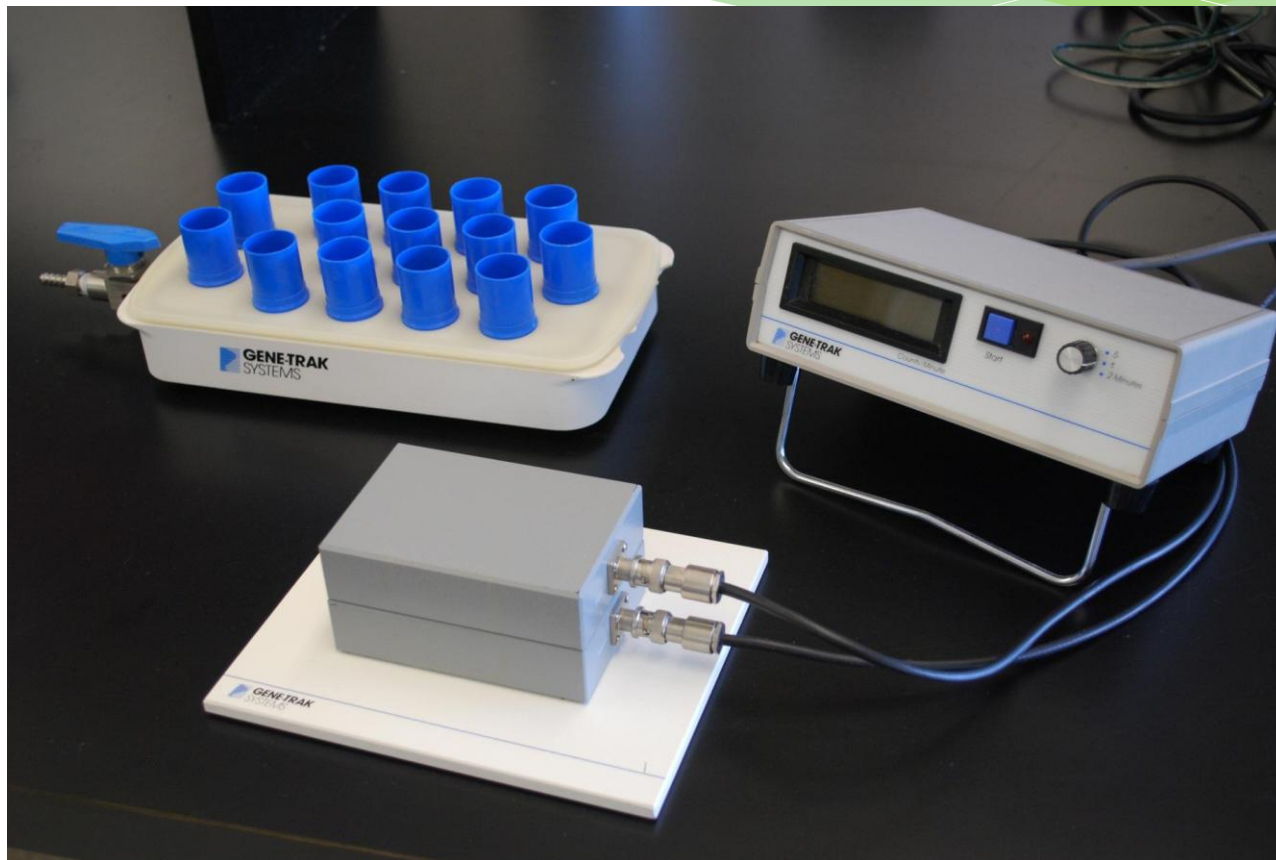
1986

GENE-TRAK® Salmonella Isotopic Format

First commercial DNA probe based diagnostic test system

- * DNA probe isotopic method for Salmonella utilized membrane filter hybridization and subsequent detection of target DNA with labeled probes.
- * Product Specifications
 - * Sensitivity: 1-5 CFU/25g
 - * Testing time: 2 hours (after 44-48 hour enrichment)
 - * Tests per kit: Up to 96
 - * Approvals: AOAC Official Method 46.C07-46.C16

GENE-TRAK® Salmonella Isotopic Format



Neogen's Timeline of Testing 1988

GENE-TRAK® Salmonella Colorimetric Assay Dipstick Format

- * DNA probe-based colorimetric detection method for Salmonella in a dipstick format. Detection was by means of ELISA-like chemistry using antiluorescein antibody conjugated to HRP.
- * This simplified assay did not require the use of radiolabeled isotopes and special handling procedures
- * Product Specifications
 - * Sensitivity: 1-5 CFU/25g
 - * Testing time: 2 hours (after 40-48 hour enrichment)
 - * Tests per kit: Up to 98
 - * Approvals: AOAC Official Method 990.13

GENE-TRAK® Salmonella Colorimetric Assay Dipstick Format



Neogen's Timeline of Testing

1995

GENE-TRAK® Salmonella Direct Labeled Probe (DLP) Dipstick Format

- * Direct labeled probe (DLP) based colorimetric detection method for Salmonella in a dipstick format. In the DLP system, the HRP was conjugated directly to the detector probe.
- * The use of the DLP chemistry eliminated one incubation and one series of wash steps, reducing the total time to detection and **allowed for implementation of user friendly protocols.**
- * Product Specifications
 - * Sensitivity: 1-5 CFU/25g
 - * Testing time: 1.5 hours (after 40-48 hour enrichment)
 - * Test per kit: Up to 98
 - * Approvals: AOAC PTM #961101

GENE-TRAK® Salmonella Direct Labeled Probe (DLP) Dipstick Format



Neogen's Timeline of Testing

1997

Reveal Salmonella

- * The Reveal for Salmonella test system provides for the rapid recovery of Salmonella in food and animal feed, allowing detection and presumptive identification of the test organism within 21 hours.
- * Product Specifications
 - * Sensitivity: 1-5 CFU/25 g
 - * Testing time: 15 minutes (after 20 hour enrichment)
 - * Tests per kit: 20
 - * Storage: 2-30°C
 - * Approvals: AOAC-RI #960801

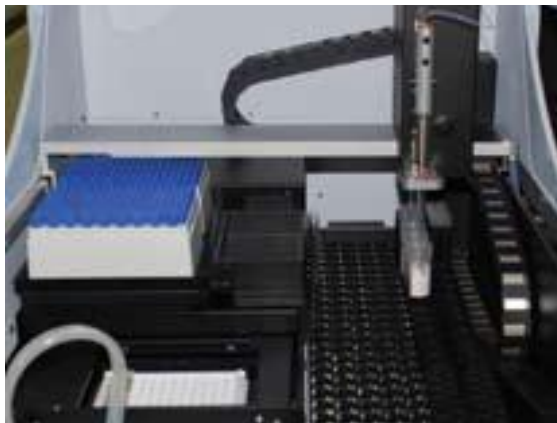
Neogen's Timeline of Testing

2001

GeneQuence® Salmonella Microwell Format

- * 1,000 to 10,000 copies of rRNA per cell give GeneQuence its high level of sensitivity. The microwell format assay utilizes the GENE-TRAK DLP chemistry.
- * The microwell format is easily adaptable to automation.
- * Product Specifications
 - * Sensitivity: 1-5 CFU/25g
 - * Testing time: 2 hours (after 24 or 40-48 enrichment, depending on food type)
 - * Tests per kit: Up to 93
 - * Approvals: AOAC PTM #030201, AOAC Official Method 2007.02

GeneQuence® Salmonella Microwell Format



Neogen's Timeline of Testing

2010

Reveal Salmonella 2.0

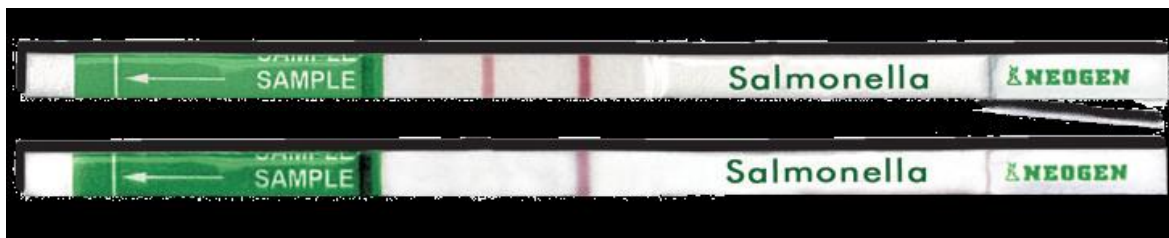
- * Reveal 2.0 for Salmonella test provides for the rapid recovery of Salmonella in chicken carcass rinse, raw ground turkey, raw ground beef, hot dogs, raw shrimp, ready-to-eat meal products, dry pet food, ice cream, fresh spinach, cantaloupe, peanut butter, swabs from stainless steel surfaces, and **sprout irrigation water samples** allowing detection and presumptive identification of Salmonella within 24 hours.
- * Product Specifications
 - * Sensitivity: 1 cfu/analytical unit 10⁶ cfu/mL post enrichment
 - * Testing time: 15 minutes (after 20-24 hour enrichment)
 - * Tests per kit: 20Kit contains: 20 Reveal 2.0 for Salmonella test devices 20 disposable transfer pipettes 20 sample cups
 - * Approvals: AOAC-RI #960801

Current Procedures

- * NOTE: 375g samples sizes are recommended by the FDA
- * Reveal Ecoli 20 hour method
 - * Place 225mL of distilled water in a stomacher bag
 - * Place 8.3g (unitized bottle of our media, RV), close bag and shake until media has mostly dissolved.
 - * Take 25mL of your sample (sprout irrigation water) and place that in the bag. Shake again.
 - * Incubate for 20-24 hours @ 36°c
 - * Shake bag once you have pulled your sample from the incubator
 - * Take 5 free falling drops and place them on the lateral flow device
 - * Read results in 15 minutes

Current Procedures

- * NOTE: 375g samples sizes are recommended by the FDA
- * Reveal 2.0 Salmonells method
 - * Place 200mL of distilled water in a stomacher bag
 - * Place 5.3g (unitized bottle of our media, RV), close bag and shake until media has mostly dissolved.
 - * Take 25mL of your sample (sprout irrigation water) and place that in the bag. Shake again.
 - * Incubate for 20-24 hours @ 42°C
 - * Shake bag once you have pulled your sample from the incubator
 - * Take 8 free falling drops and place them in the provide well, place lateral flow into the well.
 - * Read results in 15 minutes



Neogen's Timeline of Testing 2011, Future

- * Current salmonella testing is an expensive, time consuming, and complicated method. The technologies are characterized by expensive instrumentation, long enrichment/assay times, and can be complicated to perform.

Let me introduce.....

Neogen's Timeline of Testing 2011, future

ANSR™ *Salmonella* Isothermal Nucleic Acid Amplification

- * Next generation molecular platform for pathogen detection, ANSR uses a unique isothermal amplification method for the detection of specific RNA or DNA sequences of pathogenic organisms. No thermocycling is required. Detection is by means of realtime fluorescence.
- * It represents the first proven innovation in molecular diagnostics in 20 years. ANSR is easy to use and does not require expensive instrumentation to implement.

ANSR™ Salmonella Isothermal Nucleic Acid Amplification

Could your company benefit from a salmonella test that has a shorter enrichment time, a 10 minute assay, possibly producing results in a single day?



ANSR Salmonella provides the fastest time to results on the Market

STAY TUNED!

Remember

Everyday is an opportunity to do better- not just new year's Day!

Special Thanks

- * ISGA- Neogen is now a member!
- * Al Sullivan and International Specialty Supply
- * Mike Lalley and Living Foods

Please free to contact me with any questions you have..

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