Superior microbiology products for the enrichment – culture – isolation – detection of pathogens and various microorganisms in food and environmental samples.
Presenter

Carl (Chip) Zerr, III
Vice President, Product Integration

- Over 30 years experience in the food manufacturing industry in production and food safety
- Developed pathogen intervention strategies for both raw and ready-to-eat foods for U.S.A. federal establishments

- B.Sc. Degree in Food Science from Delaware Valley University
- Graduate Degree in Food Regulatory Science from Texas A&M University
- Achieved food safety certifications including:
  - HACCP for Ready-to-Eat process facilities
  - Seafood HACCP via NOAA
  - ISO Certified Internal Auditor
  - SQF Certified Practitioner
About FoodChek

• A microbiology company
  – Specializing in developing and commercializing pathogen and other microorganism detection solutions in support of global food safety
  – Expertise with challenging matrices

• Target market
  – Global food and beverage (F&B) industry
About FoodChek

• FoodChek’s microbiology products are manufactured in Europe and U.S.A with global distribution
FoodChek Product Lines

- Actero™ Elite Enrichment Media
- Actero™ Universal Enrichment Media
- MICT® System
Single-step enrichment, “fastest “time-to-results”” and accurate

Actero® ELITE ENRICHMENT MEDIA
Features of Actero™ Elite

- Patented enrichment media for the targeted detection of:
  - *Listeria* spp.
  - *Listeria monocytogenes*
  - *Salmonella* spp.
- Optimized media for superior performance
- Licensed and certified:

  ![AOAC Certification](image)

Method has been approved for publication in the HEALTH CANADA Compendium of Analytical Methods.
Compatible with Any Diagnostic System

- **BAX® System RT-PCR**
  - *Listeria spp.*
  - *Listeria monocytogenes*
  - *Salmonella spp.*
  - AOAC PTM
  - Health Canada

- **Agilent AriaMx™**
  - *Listeria spp.*
  - *Listeria monocytogenes*
  - AOAC PTM
  - AFNOR

- **Bio-Rad CFX96 Touch DeepWell**
  - *Listeria spp.*
  - *Listeria monocytogenes*
  - AOAC PTM
  - AFNOR

- **Atlas® System**
  - *Listeria spp.*
  - AOAC PTM

- **Xpress™ LM**
  - *Listeria spp.*
  - *Listeria monocytogenes*
  - AOAC PTM
Competitive Advantages

Actero™ Elite Listeria Enrichment Media
- Single-step enrichment
- Fastest time-to-results
- Accurate

Actero™ Elite Salmonella Enrichment Media
- Single-step enrichment
- Fastest time-to-results
- Accurate

FoodChek Systems Inc.

2018-07-16F

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Advantages of Single-Step Enrichment and Fastest “Time-to-Results”

- Reduce sample handling
- Use less enrichment media = less cost/test
- Improve workflow
- Higher throughput
- Release products to market sooner

Increased cash flow
Method Comparison Study

for the detection of *Listeria* spp. and *Listeria monocytogenes* using Actero™ Elite Listeria Enrichment Media

Single-step enrichment, fastest “time-to-results” and use less media*

Matrices that are AOAC RI-PTM validated (license number 111201)

- Food contact surface – stainless steel and plastic
- Non-food contact surface – sealed concrete
- Hot dog sausage
- Cold smoked salmon
- Frozen cooked shrimp
- Soft Mexican style cheese
- Fresh bagged spinach
- Smoked turkey breast
- Cured ham
- Ice cream
- Pasteurized milk
- Raw fish

USDA-FSIS MLG 8.10
- Primary Enrichment in UVM
  20-26 hours at 30°C
- Secondary Enrichment in MOPS-BLEB
  18-24 hours at 30°C
- Agar Plate Detection
  24-48 hours at 35°C

Actero™ Listeria RT-PCR Method
- Single Enrichment in Actero™ Listeria Media
  20-26 hours at 35°C
- BAX® System RT-PCR Assay
  2 hours

US FDA BAM 5 Method
- Enrichment in BLEB
  48 hours at 30°C
- Agar Plate Detection
  24-48 hours at 35°C
- BAX® System RT-PCR Assay
  2 hours

Actero™ Listeria RT-PCR Method
- Single Enrichment in Actero™ Listeria Media
  16-22 hours at 35°C

Total Time:
- USDA-FSIS MLG 8.10: 62 to 98 hours
- Actero™ Listeria RT-PCR Method: 22 to 28 hours
- US FDA BAM 5 Method: 72 to 96 hours
- Actero™ Listeria RT-PCR Method: 18 to 24 hours

*Depends on food matrix
Actero™ Elite Listeria Product List

Specifically optimized for single-step recovery and enrichment of *Listeria* spp. from food and environmental samples

<table>
<thead>
<tr>
<th>FoodChek Cat. #</th>
<th>Product Name</th>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCM-011</td>
<td>Actero™ Elite Listeria Enrichment Media</td>
<td>500G</td>
<td>Dehydrated</td>
</tr>
<tr>
<td>FCM-022</td>
<td>Actero™ Elite Listeria Enrichment Media</td>
<td>2KG</td>
<td>Dehydrated</td>
</tr>
<tr>
<td>FCM-023</td>
<td>Actero™ Elite Listeria Enrichment Media</td>
<td>10KG</td>
<td>Dehydrated</td>
</tr>
<tr>
<td>FCM-045</td>
<td>Actero™ Elite Listeria Enrichment Media – MediaBox™</td>
<td>5L</td>
<td>Liquid</td>
</tr>
<tr>
<td>FCM-046</td>
<td>Actero™ Elite Listeria Enrichment Media – MediaBox™</td>
<td>10L</td>
<td>Liquid</td>
</tr>
</tbody>
</table>
Method Comparison Study
for the Detection of *Salmonella* spp. using Actero™ Elite Salmonella Enrichment Media

Single-step enrichment, fastest “time-to-results” and use less media*

*Depends on food matrix

<table>
<thead>
<tr>
<th>Matrices that are AOAC RI-PTM validated (license number 041403)</th>
<th>Internally Validated by FoodChek Laboratories</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️ Food contact surface – stainless steel and plastic</td>
<td>☑️ Dehydrated parsley</td>
</tr>
<tr>
<td>☑️ Dry pet food</td>
<td>☑️ Ground beef</td>
</tr>
<tr>
<td>☑️ Milk chocolate</td>
<td>☑️ Ground chicken</td>
</tr>
<tr>
<td>☑️ Chocolate liquor</td>
<td>☑️ Chicken carcass rinse</td>
</tr>
<tr>
<td>☑️ Cocoa powder</td>
<td>☑️ Whole egg powder</td>
</tr>
<tr>
<td>☑️ Shell eggs</td>
<td>☑️ Peanut butter</td>
</tr>
<tr>
<td>☑️ Raw almonds</td>
<td>☑️ Whole liquid egg</td>
</tr>
<tr>
<td>☑️ Dry raisins</td>
<td>☑️ Whole black pepper</td>
</tr>
<tr>
<td>☑️ Milk chocolate</td>
<td>☑️ Dehydrated onion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Non-selective Enrichment in BPW/mTSB</th>
<th>Selective Enrichment in mRV and TT Media</th>
<th>Agar Plate Detection</th>
<th>Total Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDA-FSIS MLG 4.09</td>
<td>15-24 hours at 35/42°C</td>
<td>18-24 hours at 42°C</td>
<td>24-48 hours at 35°C</td>
<td>57 to 96 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Non-selective Enrichment in TSB/LB/NFDM</th>
<th>Selective Enrichment in RV and TT Media</th>
<th>Agar Plate Detection</th>
<th>Total Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>USFDA BAM 5 Method</td>
<td>22-26 hours at 35°C</td>
<td>22-26 hours at 35-42°C</td>
<td>24-48 hours at 35°C</td>
<td>68 to 100 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Single Enrichment in Actero™ Salmonella Media</th>
<th>BAX® System RT-PCR Assay</th>
<th>Total Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actero™ Salmonella RT-PCR Method</td>
<td>14-26 hours at 35°C</td>
<td>2 hours</td>
<td>16 to 28 hours</td>
</tr>
</tbody>
</table>

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Actero™ Elite Salmonella

Product List

Specifically optimized for single-step recovery and enrichment of *Salmonella* spp. and STEC from food and environmental samples.

<table>
<thead>
<tr>
<th>FoodChek Cat. #</th>
<th>Product Name</th>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCM-009</td>
<td>Actero™ Elite Salmonella Enrichment Media</td>
<td>500G</td>
<td>Dehydrated</td>
</tr>
<tr>
<td>FCM-010</td>
<td>Actero™ Elite Salmonella/STEC Enrichment Media</td>
<td>500G</td>
<td>Dehydrated</td>
</tr>
<tr>
<td>FCM-047</td>
<td>Actero™ Elite Salmonella Enrichment Media</td>
<td>5L</td>
<td>Liquid</td>
</tr>
<tr>
<td>FCM-048</td>
<td>Actero™ Elite Salmonella Enrichment Media – MediaBox™</td>
<td>10L</td>
<td>Liquid</td>
</tr>
</tbody>
</table>
Rapid pathogen detection nanotechnology

**MICT® SYSTEM**
MICT® System

• MICT® stands for Magnetic Immuno-Chromatographic Technology
• A diagnostic instrument with assay cassettes that detects pathogens through magnetic nanotechnology
• Designed for the small to medium size food processor/manufacturer that wants or has an in-house testing lab
• The *E. coli* O157 assay cassettes are AOAC validated for ground beef, beef trim and beef carcass swab
MICT® System
Advantages

- **Speed**: Fastest “time-to-results”
- **Accurate**: Confidence in results
- **Easy**: Only need a lab tech with GLP*
- **Compact**: Bench top system
- **Cost effective**: Affordable in-house lab system

E. coli cassettes are AOAC and Health Canada validated

*Good Laboratory Practice*
Diagnostic Instrument Comparison Study

• Three test systems were compared to the MICT® System:
  1. Company A – Lateral Flow System
  2. Company B – Lateral Flow System
  3. Company C – ELFA Method
  4. FoodChek MICT® System
A total of 200 ground beef samples were tested:

- Each system performed 50 tests
- A third party testing laboratory confirmed all sample results by PCR to ensure accuracy
- All enriched test samples were analyzed in triplicate on each testing system

All tests were performed by a trained laboratory technician in a controlled environment
The MICT® System exceeded in performance compared to its competitors and proved to achieve same day test results.

<table>
<thead>
<tr>
<th>Day 1 + Day 2 Results</th>
<th>Company A - Lateral Flow</th>
<th>Company B - Lateral Flow</th>
<th>FoodChek™ MICT System</th>
<th>Company C - ELFA Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>False Positive</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>False Negative</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>True Positive</td>
<td>7</td>
<td>16</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>True Negative</td>
<td>37</td>
<td>30</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>Total Tests</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Mismatched Triplet</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>0.54</td>
<td>0.89</td>
<td>0.95</td>
<td>1.00</td>
</tr>
<tr>
<td>Specificity</td>
<td>1.00</td>
<td>0.94</td>
<td>1.00</td>
<td>0.85</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.88</td>
<td>0.92</td>
<td>0.98</td>
<td>0.9</td>
</tr>
<tr>
<td>Time To Results</td>
<td>&lt;13 hrs</td>
<td>&lt;13 hrs</td>
<td>&lt;8 hrs</td>
<td>&lt;12 hrs</td>
</tr>
</tbody>
</table>
MICT® System
Total Time from Enrichment to *E. Coli* O157 Detection

1. Enrich sample with Actero™ *E. coli* Enrichment Media
2. Add enriched sample to MICT® *E. coli* Assay Cassette
3. Insert the cassette into the MICT® Reader and wait to complete the reading
4. Read test results on the MICT® display screen or print out

Total Handling Time – **15 minutes** approximately
Test time – **Under 8 hours** approximately
ACTERO™ ELITE ENRICHMENT MEDIA,
UNIVERSAL ENRICHMENT MEDIA AND MICT® SYSTEM

SUMMARY
Actero™ Elite Enrichment Media

Advantages

- Single-step enrichment
- Fastest time-to-results
- Specific for target organism
- Use less media* = less cost/test
- Optimized for challenging matrices
- Compatible with any diagnostic system
- AOAC, AFNOR and Health Canada validated

*Depends on food matrix

All ingredients sourced and manufactured in Europe and U.S.A.
Actero™ Universal Enrichment Media

Advantages

☑️ Over 130 standard enrichment products
☑️ For enrichment, culture, isolation and detection of pathogens, yeasts, molds and coliforms
☑️ High quality
☑️ Price competitive
☑️ Compatible with any testing method

All ingredients sourced and manufactured in Europe and U.S.A.
MICT® System

Advantages

☑️ Speed – fastest “time-to-results”
☑️ Easy – only needs a lab technician with GLP*
☑️ Accurate – confidence in results
☑️ Cost effective – affordable in-house lab system
☑️ Compact – bench top system
☑️ E. coli cassette is AOAC and Health Canada validated

*Good Laboratory Practice

All ingredients sourced and manufactured in U.S.A.
Technical Data Comparison/ Application Notes

• Standard media formulations
• Package inserts and SDS (MSDS)
  – Available upon request, OR
  – On the FoodChek website under the product listings: http://foodchekeksystems.com/products/
## Sample Request Process

<table>
<thead>
<tr>
<th><strong>North America Toll Free:</strong> 1-877-298-0208</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chard Morrison</strong></td>
</tr>
<tr>
<td>Distribution and Logistics Coordinator</td>
</tr>
<tr>
<td><a href="mailto:cmorrison@foodcheksystems.com">cmorrison@foodcheksystems.com</a></td>
</tr>
<tr>
<td>Extension 1</td>
</tr>
</tbody>
</table>
## Customer Support

### North America Toll Free: 1-877-298-0208

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terry Macartney</td>
<td>Executive Vice President, Operations and Product Development</td>
<td><a href="mailto:tmacartney@foodcheksystems.com">tmacartney@foodcheksystems.com</a> Extension 4</td>
</tr>
<tr>
<td>Carl (Chip) Zerr III</td>
<td>Vice President, Product Integration</td>
<td><a href="mailto:czerr@foodcheksystems.com">czerr@foodcheksystems.com</a> Phone: 856-200-9184</td>
</tr>
<tr>
<td>Chard Morrison</td>
<td>Distribution and Logistics Coordinator</td>
<td><a href="mailto:cmorrison@foodcheksystems.com">cmorrison@foodcheksystems.com</a> Extension 1</td>
</tr>
<tr>
<td>Sandra Rogoza</td>
<td>Director, Sales and Channel Management</td>
<td><a href="mailto:srogoza@foodcheksystems.com">srogoza@foodcheksystems.com</a> Extension 3</td>
</tr>
</tbody>
</table>
Superior microbiology products for the enrichment – culture – isolation – detection of pathogens and various microorganisms in food and environmental samples.

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Calgary, Alberta T2R 1J6
Canada
Phone: 403-269-9424
Email: info@foodcheksystems.com