

## Thermo Scientific SureTect PCR System Visibly simple food pathogen testing

Itziar Olea  
Field Application Scientist Spain & Portugal

■ The world leader in serving science



# World leader in serving science



>100,000  
colleagues



7,000  
R&D scientists/engineers



\$1.5B  
invested in R&D



>\$40B  
in revenue

## Thermo Scientific SureTect PCR System Visibly simple food pathogen testing

■ The world leader in serving science



| Product  | New Format Sku | Existing Sku* |
|--|----------------|---------------|
| SureTect Salmonella species Assay  | A56841         | PT0100A       |
| SureTect Listeria species Assay  | A56842         | PT0200A       |
| SureTect L. monocytogenes Assay  | A56843         | PT0300A       |
| SureTect Escherichia coli O157:H7 Assay  | A56844         | PT0400A       |
| SureTect Cronobacter species assay   | A56845         | PT1060A       |
| SureTect Escherichia coli O157:H7 and STEC Screening PCR Assay                 | A56838         | A44254        |
| SureTect Escherichia coli STEC Identification PCR Assay                        | A56840         | A45330        |
| SureTect Campylobacter jejuni, C. coli and C. lari PCR Assay                   | A56835         | A44251        |
| SureTect Vibrio cholerae, V. parahaemolyticus & V. vulnificus PCR Assay        | A56837         | A44253        |
| SureTect Staphylococcus aureus PCR Assay                                       | A56839         | A44255        |
| RapidFinder Salmonella species, Typhimurium and Enteritidis Multiplex PCR Kit  | A56846         | A33227        |
| RapidFinder Salmonella species, Typhimurium and Enteritidis Multiplex Flex Kit | A56847         | A33227KF      |



# SureTect PCR Workflow

Simplified for productivity



Enrichment



Lysis



Run & read



Report/confirm



One workflow for all pathogen targets

Flexibility for 1 to 96 tests in each run

Ready-to-use and pre-dispensed reagents

Report negatives within 1 day

Test multiple pathogens simultaneously

Simple, rapid confirmation tests for PCR-positives

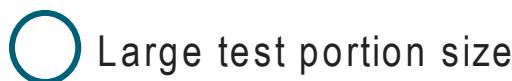
# Complete pathogen detection in a single assay



# Breadth of validations and matrices

SureTect PCR Assays for all industrial segments

|                               | Listeria species | Listeria mono | Salmonella species |
|-------------------------------|------------------|---------------|--------------------|
| Broad range of foods of claim | ✓                | ✓             | ✓                  |
| Pet food                      |                  |               | ✓                  |
| Environmental samples         | ✓                | ✓             | ✓                  |
| Meat                          |                  |               | ✓                  |
| Cocoa and chocolates          |                  |               | ✓                  |
| Powdered infant formula       |                  |               | ✓                  |
| Produce and fruits            |                  |               | ✓                  |
| Feeding stuffs and pet food   |                  |               | ✓                  |



Large test portion size



# Breadth of validations and matrices

Targets important to specific industrial segments

|                            | Campy | Crono | E. coli<br>O157:H7 | STEC | Salmonella spp.<br>Enteritidis,<br>Typhimurium | Staph | Vibrio |
|----------------------------|-------|-------|--------------------|------|--|-------|--------|
| Dairy                      |       |       |                    | ✓    |  | ✓     |        |
| Meat                       |       |       | ✓                  | ✓    | ✓  |       |        |
| Poultry meat               | ✓     |       |                    |      | ✓  |       |        |
| Fish and seafood           |       |       |                    |      |  |       | ✓      |
| Produce and Fruit          |       |       | ✓                  | ✓    |  |       |        |
| Powdered infant formula    | ✓     |       |                    |      |  | ✓     |        |
| Environmental samples      |       | ✓     |                    |      | ✓  |       |        |
| Primary production samples |       |       |                    |      | ✓  |       |        |

 Large test portion size included



# Customer challenges

User  
insight

1. Reduce hands-on time & increase efficiency
2. Easier handling of plates
3. Difficult to visualize progress
4. Simplify usability of the workflow
5. Reduce issues caused by human error



# SureTect PCR Assay workflow



Enrichment



Using stepper pipette, add  
10  $\mu$ L of Proteinase K  
Reagent to Lysis Tubes



Add 10  $\mu$ L of sample  
enrichment



10 minutes at 37°C then  
5 minutes at 95°C



Multi-channel pipette



Transfer 20  $\mu$ L of DNA  
lysate to PCR tube



Vortex for 10 seconds  
Flick to remove droplets



Run PCR

# SureTect PCR Assay workflow improvements

## PCR Step



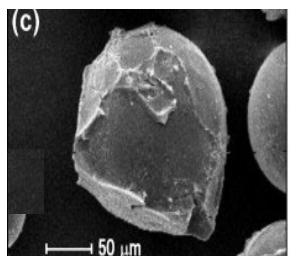
| Workflow step         | Remove aliquot from Lysis Tube  | Transfer to PCR Tube and cap PCR Tubes  | Load PCR Tubes into Applied Biosystems™ QuantStudio™ 5 Food Safety Real-Time PCR System—Run and review results   |
|-----------------------|---|---|--|
| Workflow improvements | <ul style="list-style-type: none"><li>Pipette directly through the 96-well Pierceable Seal for reduced handling step</li><li>Optional: Lysis tube Uncapping Tool for easy cap removal</li></ul> | <ul style="list-style-type: none"><li>PCR plates color-coded to target</li><li>Breakable PCR Assay Plate format for flexibility</li><li>Plate orientation markings for traceability</li></ul> | <ul style="list-style-type: none"><li>Applied Biosystems™ QuantStudio™ 5 Strip Plate Tray enables easy transfer of PCR Tubes into the instrument</li></ul> |

# Colour Indicator for Proteinase K



## Increased Confidence

- Reduce the risk of human error
- Clear Lysis Reagent pre-filled into Lysis Plate tubes
- Blue Proteinase K reagent enables visual tracking of pipetted wells



**Special beads in Lysis reagent 1 remove PCR inhibitors efficiently!**



# Pierceable seals for Lysis Tubes



## Increased convenience and Efficiency

- Reduce handling steps with pierceable seals
- Single step for sealing Lysis Tubes
- Remove lysate aliquot with no need for decapping



# New Lysis and PCR plates



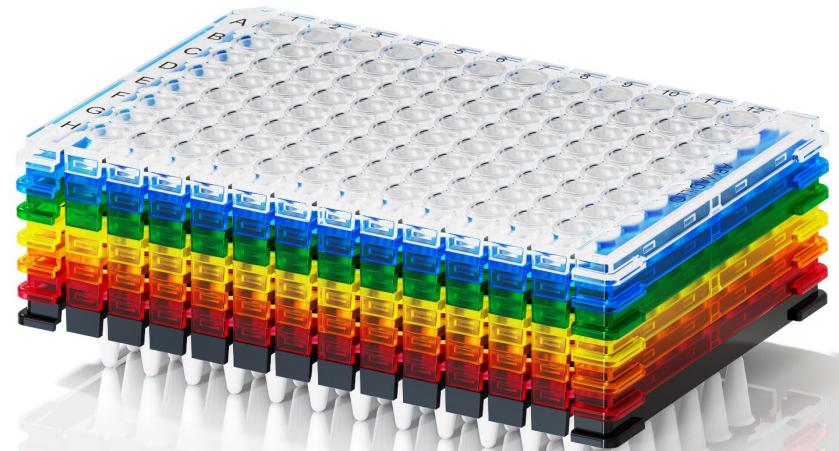
## Reduce risk of human error

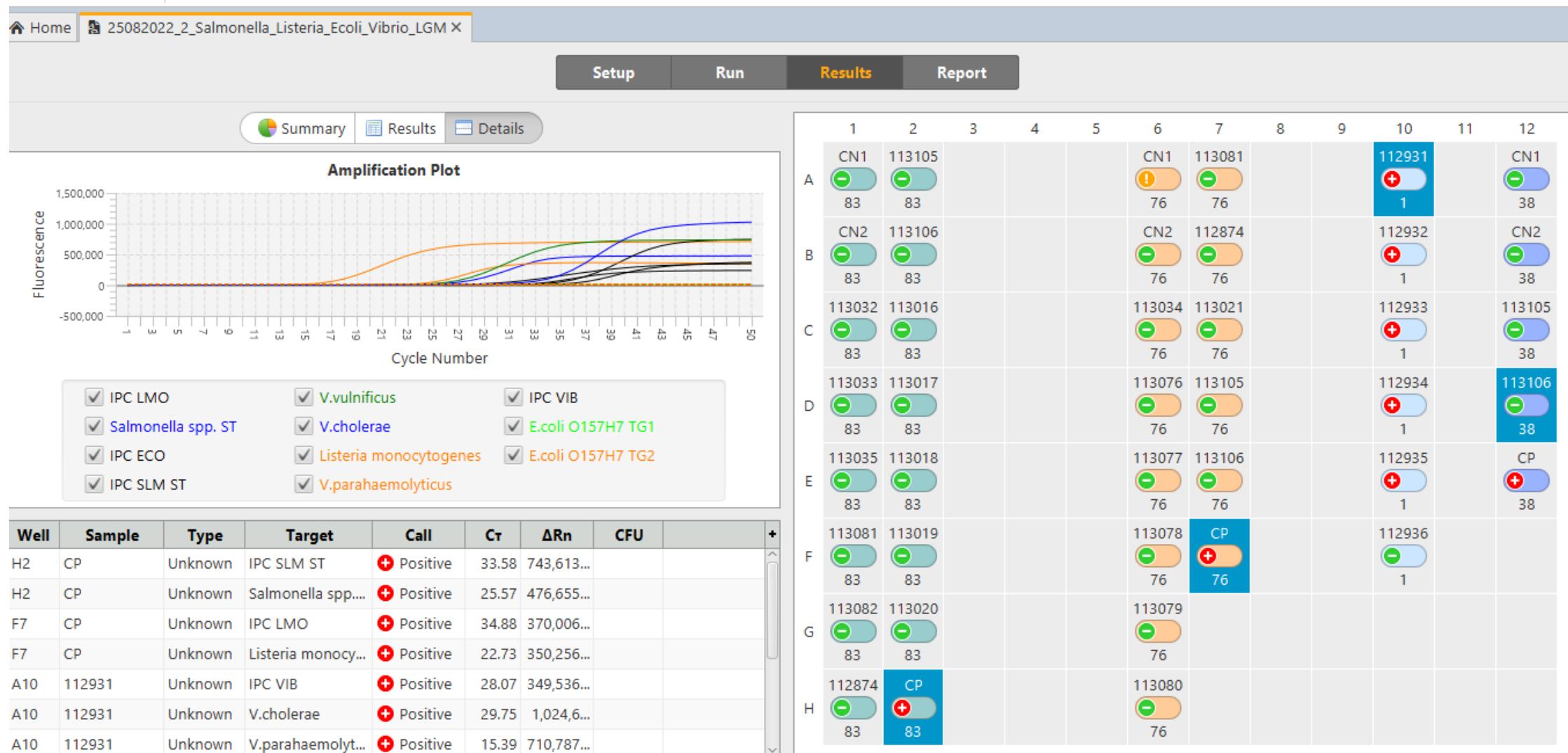
- Color-coded assay plates to target pathogen
- Clear orientation on plates



## Optimize Handling

- Safely and easily break plates into strips by hand
- Easy to remove seals





# Workflow tools

Ultimate handling and ease-of-use

## PCR Strip Cutting Tool

- Safely & Easily cut strips using the Strip Cutting Tool

## Capping and Uncapping Tools

- Cap & uncap tubes with ease and simplicity

## 96-Well Base and trays

- Set samples up securely
- Transfer in a single move to instruments



# SureTect Food Safety PCR System instrumentation

Applied Biosystems™ SimpliAmp™ Thermal Cycler



## Intuitive and easy interface

- Large, easy-to-use color touchscreen for easy programming and quick status checks (program once only for SureTect PCR Assay sample preparation)



## Flexible and open system

- Applied Biosystems™ VeriFlex™ Block provides three independent temperature zones for PCR optimization



## Cloud-enabled

- Conveniently access your instrument anytime, anywhere with the Connect Platform



## Maximize bench space

- Compact design helps save valuable bench space



# SureTect Food Safety PCR System instrumentation

## Applied Biosystems™ QuantStudio™ 5 Food Safety PCR System



**Intuitive and easy** to use for all levels of experience

- Touchscreen usability, allowing you to stay connected to your data easily



**Multiplex with ease**—up to six excitation and six emission filters

- 21 different color combinations, allowing a broad range of detection chemistries and maximum multiplexing



**Get up and running quickly**—factory-calibrated for accuracy, quick installation, and immediate use

- Preoptimized protocol templates help minimize training for new users



**Maximize benchtop space**—compact instrument can be configured as a stand-alone or with a computer



**Open instrument**—suitable for all our food safety, authenticity, and quality PCR tests.

- Cloud-enabled, offering the potential for data sharing, analysis and trending
- Capacity for processing several hundred samples a day



# SureTect Food Safety PCR System Software

## Thermo Scientific™ RapidFinder™ Analysis Software v2.0



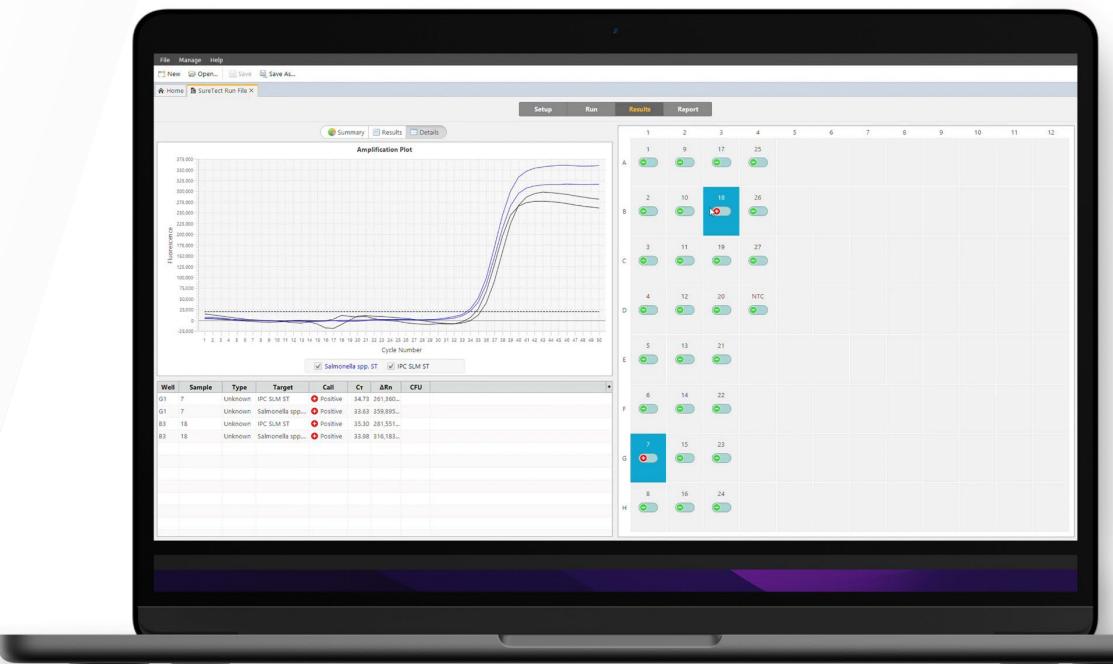
### Simple set-up

- Intuitive sample set-up
- Flexible plate layout
- Pre-set, optimized thermal cycling conditions per target
- Interrogation of results for the whole plate, grouped by sample, or for individual PCR tubes



### Automatic data interpretation

- Automatically generates results (presence or absence of the target)
- Quick interpretation of data with flags, notifications, and prompts
- Detailed report generation for printing or export
- Interoperability with LIMS or similar data management tool for importing plate set-up and exporting assay results



Ease of use from kit files and  
ease of data interpretation  
—red or green light

Home | 25082022\_2\_Salmonella\_Listeria\_Ecoli\_Vibrio\_LGM X | SEROTPIFICACION X | 23032021\_L\_SPP\_LMONO\_SAL\_INSA\_MARCO 2021 X

**Setup**   **Run**   **Results**   **Report**

**Summary**   **Results**   **Details**

**Amplification Plot**

Fluorescence

Cycle Number

IPC LMO    Listeria spp.  
 Listeria monocytogenes    IPC LSP

| Well | Sample    | Type    | Target                 | Call       | C <sub>T</sub> | ΔRn        | CFU |  | + |
|------|-----------|---------|------------------------|------------|----------------|------------|-----|--|---|
| B1   | SO_705_II | Unknown | IPC LSP                | + Positive | 32.36          | 955,274... |     |  |   |
| B1   | SO_705_II | Unknown | Listeria spp.          | + Positive | 17.22          | 412,671... |     |  |   |
| B2   | SO_705_II | Unknown | IPC LMO                | + Positive | 30.56          | 1,008,1... |     |  |   |
| B2   | SO_705_II | Unknown | Listeria monocytogenes | + Positive | 24.13          | 1,070,0... |     |  |   |

**Results**

| 1                                  | 2                                  | 3                                  | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------------------------------|------------------------------------|------------------------------------|---|---|---|---|---|---|----|----|----|
| A<br>SO_7...<br>0020...<br>SO_7... | A<br>SO_7...<br>0020...<br>SO_7... | A<br>SO_7...<br>0020...<br>SO_7... |   |   |   |   |   |   |    |    |    |
| B<br>SO_7...<br>SO_7...<br>SO_7... | B<br>SO_7...<br>SO_7...<br>SO_7... |                                    |   |   |   |   |   |   |    |    |    |

Subject: NF VALIDATION mark

La Plaine Saint-Denis, October 6<sup>th</sup>, 2022

Dear Sir,

Following the positive agreement expressed on October 6<sup>th</sup> 2022, by the Technical Board of the NF VALIDATION mark (NF102), in its application to the food industry, I beg to inform you that the extension of NF VALIDATION certification has been granted to OXOID ThermoFisher for the following alternative method:

**Thermo Scientific™ SureTect™ Listeria monocytogenes PCR Assay**

Certificate reference No. UNI 03/08-11/13, with end of validity 04<sup>th</sup>-Nov.-2025

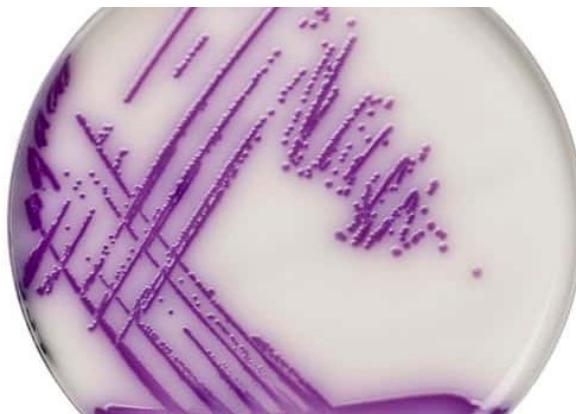
This validation extension study, performed by comparison to the reference method NF EN ISO 11290-1 (2017) and according to the validation protocol NF EN ISO 16140-2 (2016), allow to validate a new enrichment protocol using the broth 24LEB at 24±4h and to validate a new formulation of Brilliance™ Listeria Agar.

Yours Sincerely.

# Precis™ Chromogenics Workflows

As easy than 1, 2, 3

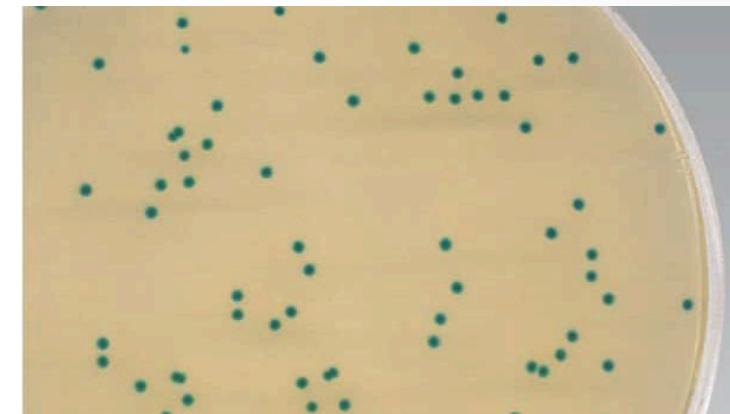
## Salmonella Precis™



- Broad range of food, feeding stuffs, environmental samples



## Cronobacter Precis™



- Infant formula & cereals, environmental samples

**MICROVAL®**   
NEN

## Listeria Precis™

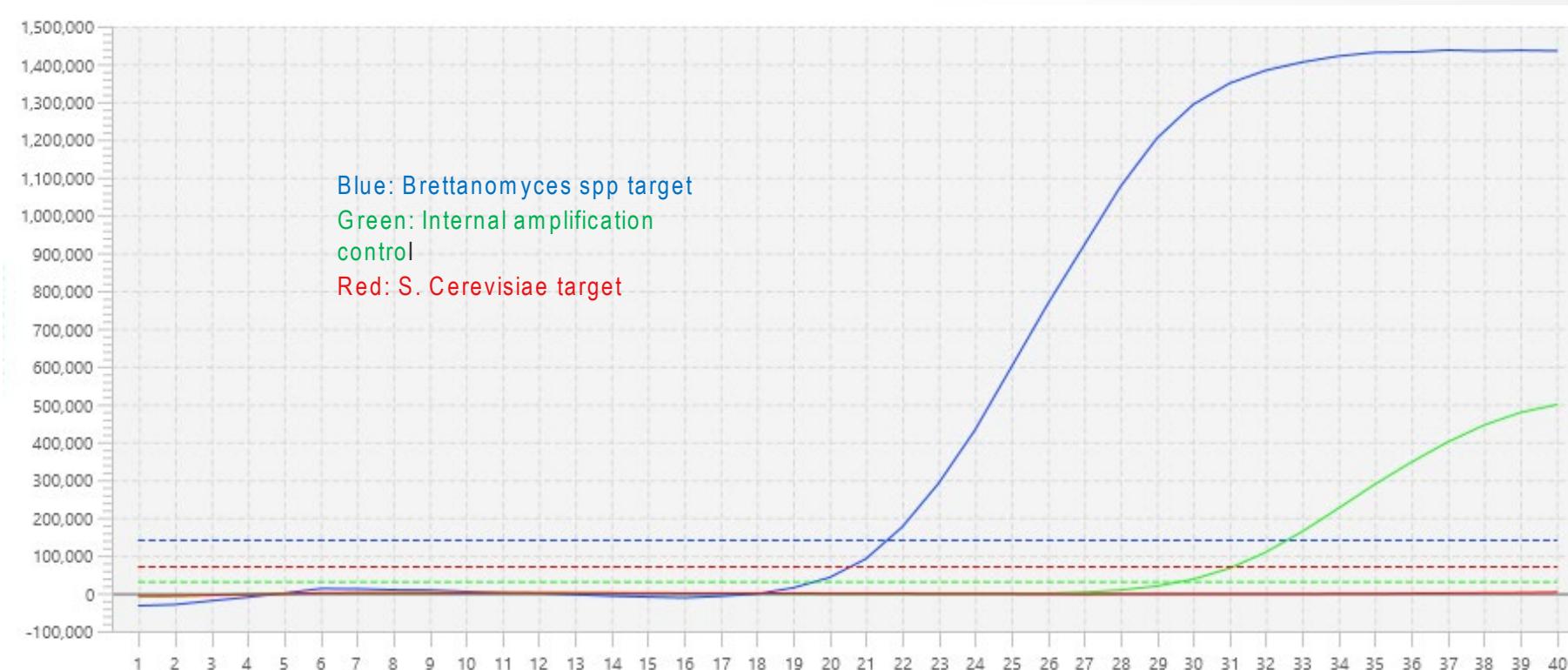


New formulation  
New workflow  
Approval Oct 2022



# Brettanomyces & S. cerevisiae

## Brettanomyces & S. cerevisiae



# Salmonella Typhimurium & Enteritidis

## Surecount & Primary Production samples

**Data interpretation**

There is no need for the use of supporting calculators as RapidFinder Analysis software (RFA) provides the answer directly

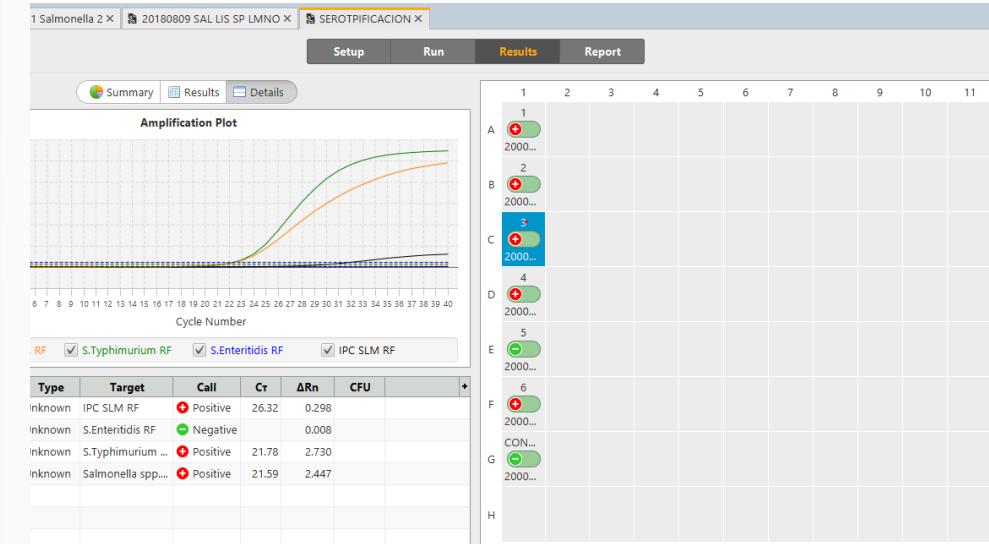
RFA calculates the CFU per 30mL sample for each target.

CFU can be converted to CFU/original sample by using the multiplication table found in the IFU.

| Matrix                                   | Sample size  | Multiplication factor |
|--|--------------|-----------------------|
| Ground turkey                            | 325 g        | 65                    |
| Ground beef                              | 325 g        | 43.3                  |
| Ground pork                              | 325 g        | 43.3                  |
| Chicken carcass rinse - finished product | 400 mL rinse | 13.3                  |

**Example:** The software gives a CFU/30 mL of 170 for a carcass rinse sample. Applying the multiplication factor to this CFU, results in a CFU/400 mL (per carcass) of 2261 (170 x 13.3).

The screenshot shows the software's user interface with a red header. Below it, there's a section titled "Data interpretation" with a teal background. It contains text about RFA calculating CFU per 30mL and a multiplication table for different matrices. A callout box points from the "Multiplication factor" table to a "Results" table below. This table has columns for Well, Sample, Type, Target, Call, Cr, ΔRn, and CFU. It lists several rows of data, including a row for "Well A1" which corresponds to the example given in the text. At the bottom of the screenshot, there's a note: "25 Proprietary & Confidential | May-2023 Internal Use Only Do Not Distribute".



## Visibly simple food pathogen testing

Thermo Scientific™ SureTect™ PCR System—  
simple, rapid workflows designed to get results

# RapidFinder™ Animal Detection Kits

| Product name                      | Part no. | Volume | Species name   |
|-----------------------------------|----------|--------|--|
| GMO Extraction kit                | A15570   | 48 rxn | Generic for Speciation & GMO   |
| RapidFinder™ Beef ID kit          | A24391   | 48 rxn | Bos taurus   |
| RapidFinder™ Equine ID kit        | A15570   | 48 rxn | Equus caballus   |
| RapidFinder™ Pork ID kit          | A24392   | 48 rxn | Sus scrofa   |
| RapidFinder™ Chicken ID kit       | A24393   | 48 rxn | Gallus gallus  |
| RapidFinder™ Turkey ID kit        | A24394   | 48 rxn | Meleagris gallopavo  |
| RapidFinder™ Sheep ID kit         | A24395   | 48 rxn | Ovis aries   |
| RapidFinder™ Poultry ID kit       | A24397   | 48 rxn | Several avian species, including Gallus gallus (chicken), Meleagris gallopavo (turkey), Anas platyrhynchos (duck), Struthio camelus (ostrich), and Anser (goose) |
| RapidFinder™ Ruminant ID kit      | A24396   | 48 rxn | Bos taurus (beef), Ovis aries (sheep), Capra hircus (goat), Cervus elaphus (red deer), and Capreolus capreolus (roe deer)  |
| RapidFinder™ Fish ID kit          | A24398   | 48 rxn | Atlantic Salmon, Angler, Cod, Hake, Halibut, Seabass, Anchovy, Sole, Dab, Trout, Tiger Shark, European Eel, Red Bandfish   |
| RapidFinder™ Quant Multi Meat Set | A24399   | 48 rxn |  |

Optimized for Applied Biosystems® 7500 FAST Real-Time PCR Instrument

 More predesigned assays available (Goat, Fallow deer, Milk, Cat, Monkey, Rat...) and also Custom Assays are possible!

# SGS All Species ID Analyser Kits



- **SGA All Species ID Meat Analyser Kits**
  - SGS All Species ID Meat Analyser Kit (Barcodes **1**:1-24)
  - SGS All Species ID Meat Analyser Kit (Barcodes **1**:25-48)
- **SGA All Species ID Fish Analyser Kits**
  - SGS All Species ID Fish Analyser Kit (Barcodes **2**:1-24 & **3**:1-24)
  - SGS All Species ID Fish Analyser Kit (Barcodes **2**:25-48 & **3**:25-48)
- **SGA All Species ID Plant Analyser Kits**
  - SGS All Species ID Plant Analyser Kit (Barcodes **4**:1-24 & **5**:1-24)
  - SGS All Species ID Plant Analyser Kit (Barcodes **4**:25-48 & **5**:25-48)

4) Choose the target databases (Meat, Fish and/or Plant), for which DNA sequence comparison is intended (see Figure 6).

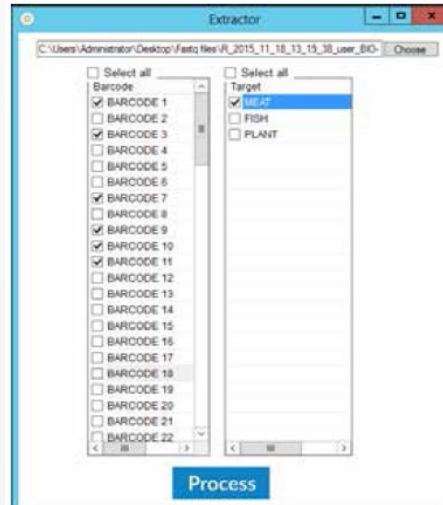


Figure 6: Target database-DNA sequence comparison selection screen.

| Target | Barcode | Species                             | Number Of Reads |
|--------|---------|-------------------------------------|-----------------|
| FISH   | 1       | Pangasianodon_hypophthalmus         | 3680            |
|        |         | Sander_lucioperca                   | 1737            |
|        |         | Pleuronectes_platessa               | 1158            |
|        |         | Anguilla_japonica                   | 1124            |
|        |         | Lophius_piscatorius                 | 615             |
|        |         | Chanos_chanos                       | 364             |
|        |         | Melanogrammus_aeglefinus            | 64              |
|        |         | Oncorhynchus_mykiss                 | 630             |
|        | 2       | Abramis_brama                       | 2086            |
|        | 3       | Leuciscus_leuciscus                 | 758             |
|        |         | Leuciscus_idus                      | 550             |
|        |         | Rutilus_rutilus                     | 534             |
|        |         | Vimba_vimba                         | 407             |
|        |         | Alburnus_istanbulensis              | 284             |
|        | 4       | Rutilus_rutilus                     | 5417            |
|        |         | Pollachius_virens                   | 2807            |
| MEAT   | 22      | Bos_taurus                          | 19306           |
|        | 23      | Gallus_gallus                       | 16534           |
|        | 24      | Bos_taurus                          | 4217            |
|        |         | Sus_scrofa                          | 10105           |
|        |         | Bos_taurus                          | 158             |
| PLANT  | 3       | Origanum_sp./Origanum_onites        | 86660           |
|        |         | Origanum_sp./Origanum_vulgare       | 43666           |
|        |         | Origanum_sp./Origanum_majorana/Orig | 42978           |
|        |         | Thymus_sp.                          | 5159            |
|        |         | Convolvulus_arvensis                | 2772            |
|        |         | Lactuca_sp./Lactuca_sativa          | 1369            |
|        | 4       | Origanum_sp./Origanum_onites        | 71582           |
|        |         | Origanum_sp./Origanum_vulgare       | 36150           |
|        |         | Origanum_sp./Origanum_majorana/Orig | 35415           |
|        |         | Laurus_nobilis                      | 15076           |

# Environment Water testing

Quality solutions for the detection and quantification  
of pathogenic microorganisms in water

## DIATHEVA DI-Check Legionella pneumophila

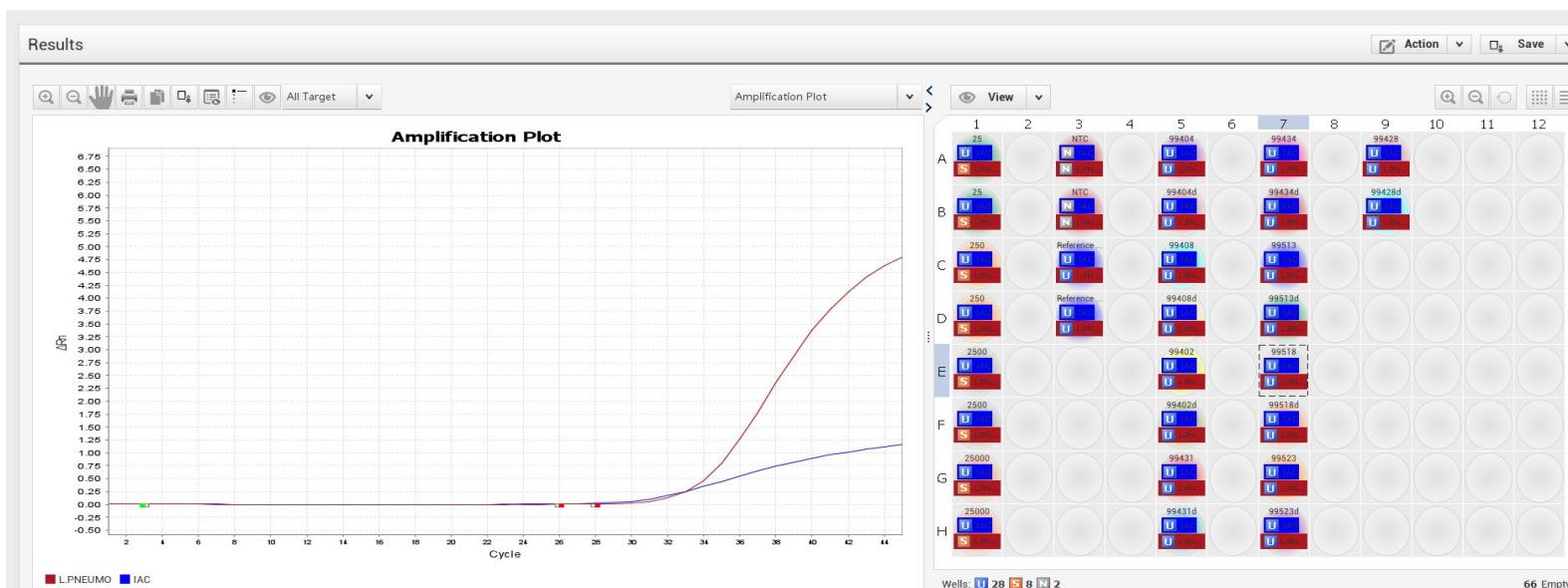
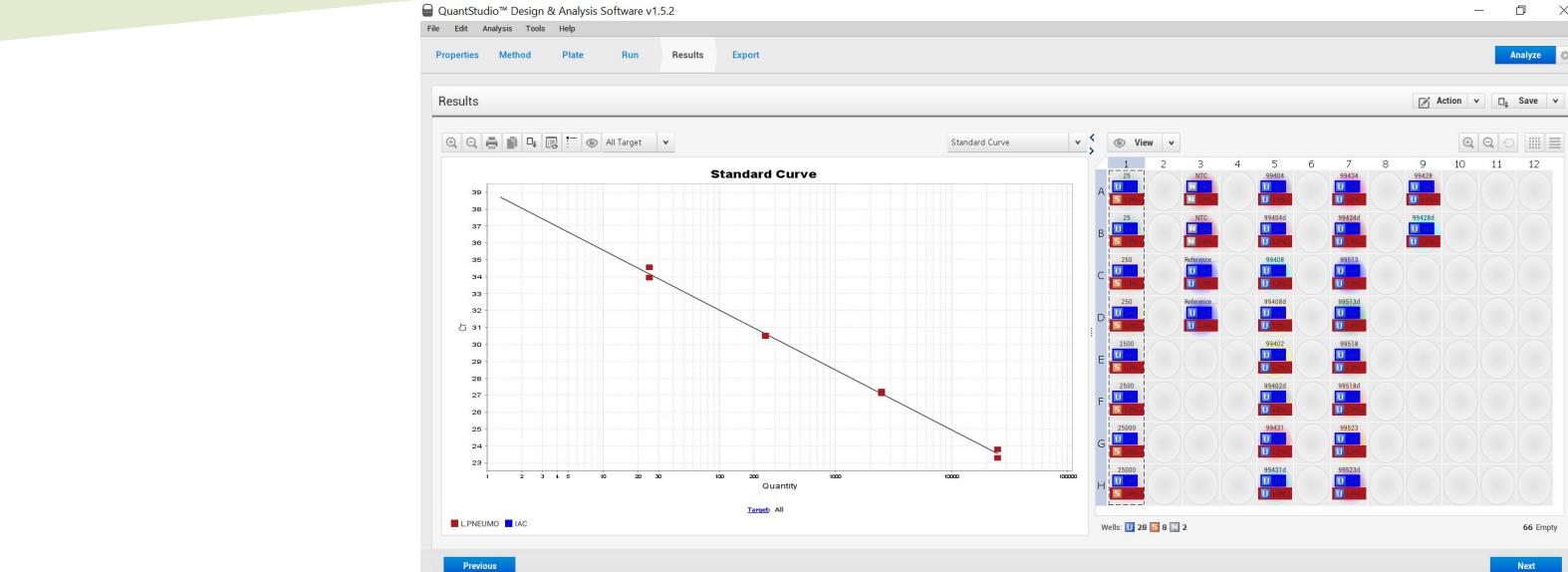


DI-Check Legionella pneumophila  
Certificate reference No. DTV 41/01-12/19, with end of validity 04-Dec-2023  
WATER ANALYSIS METHODS

The method is validated for the detection and quantification of *L. pneumophila*  
in all types of water samples, by comparison to the reference method NF T90-471 (2015)  
and ISO/TS 12869 (2019) and according to the AFNOR certification's validation protocol  
for the detection and enumeration of *L. pneumophila* by PCR.  
<https://nf-validation.afnor.org/>

| Code    | Product                             | Description        | Size            |
|---------|-------------------------------------|--------------------|-----------------|
| MBK0080 | DNApure Water Isolation kit (AFNOR) | DNA extraction kit | 100 extractions |
| MBK0058 | DI-Check Legionella spp. kit        | real-time PCR kit  | 100 tests       |
| MBK0081 | DI-Check L. pneumophila kit (AFNOR) | real-time PCR kit  | 100 tests       |



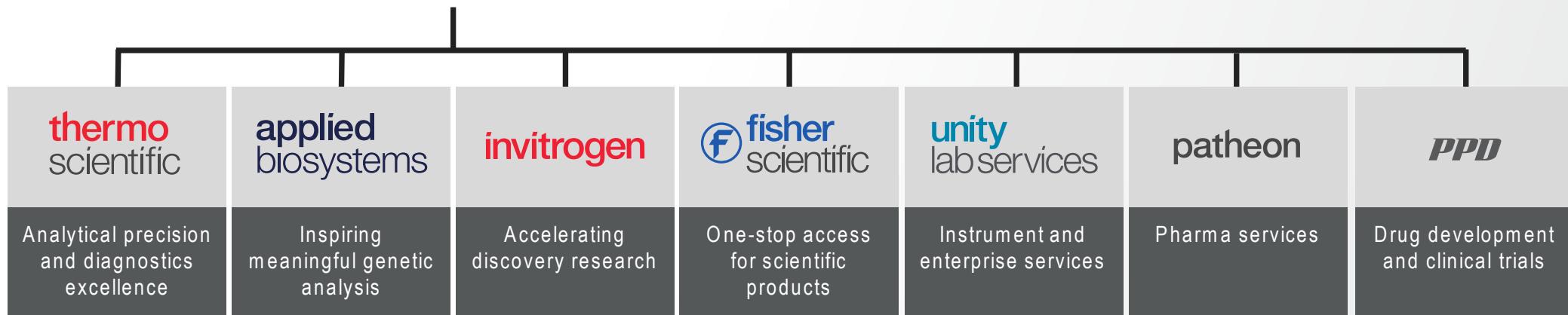


| Well number | Type of sample | Name sample | Samples |            |                   |                |               | Expression of Results                  |  |
|-------------|----------------|-------------|---------|------------|-------------------|----------------|---------------|--|--|
|             |                |             | Ct      | Average Ct | Filtration volume | Result GU/well | Result GU/L   |  |  |
| E5          | UNKNOWN        | 99402       | N/A     |            | 1000              |                |               |  |  |
| F5          | UNKNOWN        | 99402       | N/A     | 0,00       | 1000              | 0              | Negative      | L. pneumophila not detected            |  |
| E5          | UNKNOWN        | 99402       | 29,56   |            | 1000              |                |               |  |  |
| F5          | UNKNOWN        | 99402       | 29,12   | 29,34      | 1000              |                | no inhibition |  |  |
| A5          | UNKNOWN        | 99404       | 38,72   |            | 1000              |                |               |  |  |
| B5          | UNKNOWN        | 99404       | 37,76   | 38,24      | 1000              | 2              | LQ            | L. pneumophila not detected            |  |
| A5          | UNKNOWN        | 99404       | 29,39   |            | 1000              |                |               |  |  |
| B5          | UNKNOWN        | 99404       | 29,31   | 29,35      | 1000              |                | no inhibition |  |  |
| C5          | UNKNOWN        | 99408       | 28,03   |            | 1000              |                |               |  |  |
| D5          | UNKNOWN        | 99408       | 28,25   | 28,14      | 1000              | 1265           | 80986,2963    | L. pneumophila quantitatively detected |  |
| C5          | UNKNOWN        | 99408       | 29,12   |            | 1000              |                |               |  |  |
| D5          | UNKNOWN        | 99408       | 28,94   | 29,03      | 1000              |                | no inhibition |  |  |
| A9          | UNKNOWN        | 99428       | 38,08   |            | 1000              |                |               |  |  |
| B9          | UNKNOWN        | 99428       | 38,25   | 38,17      | 1000              | 2              | LQ            | L. pneumophila not detected            |  |
| A9          | UNKNOWN        | 99428       | 29,20   |            | 1000              |                |               |  |  |

# Our leading scientific products, services and workflow solutions

**ThermoFisher**  
SCIENTIFIC

The world leader in  
serving science



# Thank you

