BIOMÉRIEUX

AUGMENTED DIAGNOSTICS FOR *LISTERIA* CONTROL

Listeria Contamination and Prevention in the Food Industry

Your Trusted Partner in Augmented Diagnostics

PIONEERING DIAGNOSTICS

Listeria: Everything You Need To Know

Listeria are bacteria capable of **surviving in cold**, moist environments such as refrigeration units and processing areas.

The most dangerous species, *Listeria monocytogenes*, can contaminate ready-to-eat foods, dairy, meat, and seafood products. Foodborne illness (invasive listeriosis) then leads to a high number of **hospitalizations and deaths** in vulnerable populations (pregnant women, immunocompromised patients, elderly, children).

The presence of *Listeria* spp. in the environment often serves as an indicator of contamination by *Listeria monocytogenes.*

Listeria Contamination Concerns Everyone

Implementing an Augmented Diagnostics approach can help answer questions caused by *Listeria* contamination.

PLANT / SUPPLY CHAIN MANAGER

- How can you manage raw material quality to avoid *Listeria* contamination?
- How can you improve and assure the quality, supply, and shelf life of your products?

LAB STAFF

- How can you detect and understand the presence of *Listeria* in your environment, raw materials, and products?

FOOD SAFETY & QUALITY MANAGER

- How can you rapidly find the origin of a *Listeria* contamination in order to take effective, corrective, and preventive actions?
- How can you implement the appropriate cleaning and sanitation procedures and be sure of their efficacy?

CEO / CFO

- How can you protect your brand image and avoid outbreaks?
- How can you find the right balance between quality and non-quality costs?
- How can you limit the cost and associated costs of a *Listeria* contamination?

Important Figures

80%

of *Listeria* contamination in ready-to-eat food is due to **environmental contamination in food production areas**[3]

Recalls due to *Listeria monocytogenes* are increasing:

+36%

in France in 2023 vs 2022 for meat products[1]

Listeriosis affected around

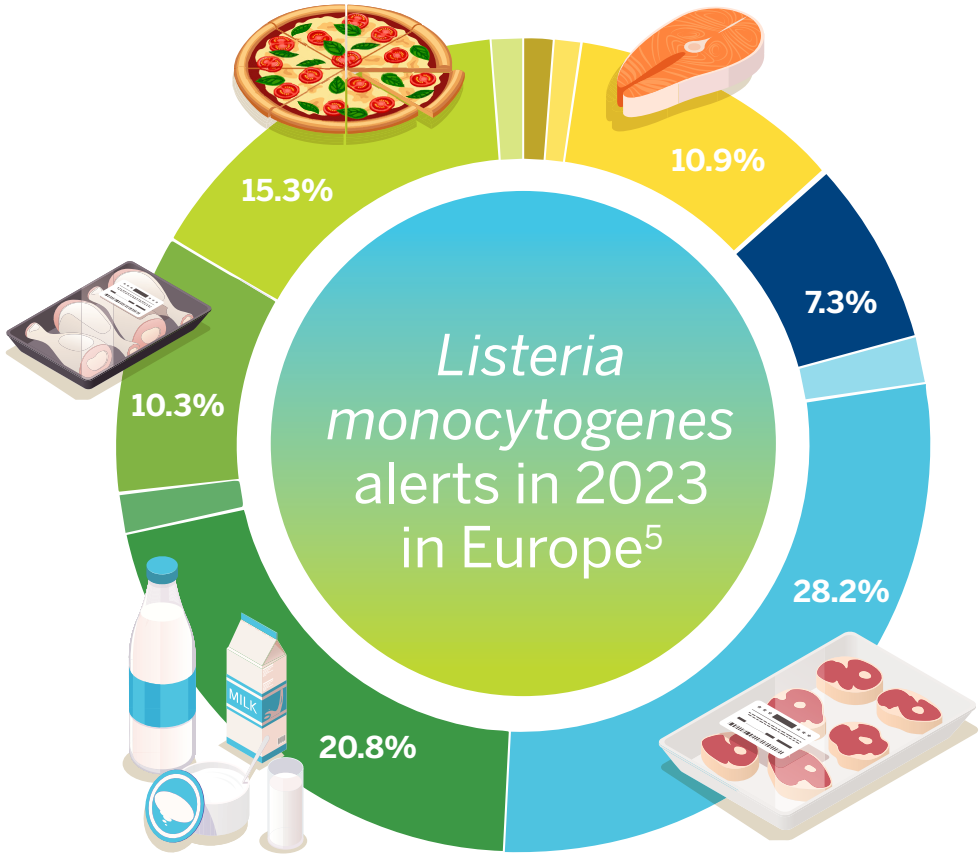
3,000

people in the EU in 2023, **leading to 335 deaths** *+20% vs 2022*[2]

The cost of a recall can be

MILLIONS

of euros/dollars, including costs from **product losses, production delays, decreased sales, and brand damage**[4]



- Cereals & Bakery Products
- Confectionery
- Fish & Seafood
- Food Additives
- Fruits, Vegetables & Legumes
- Ice & Desserts
- Meat & Meat Products
- Milk & Dairy Products
- Other Food Product / Mixed
- Poultry Meat & Poultry Meat Products
- Prepared Dishes & Snacks
- Soups, Broths, Sauces, & Condiments

Ready To Tackle *Listeria* Challenges?

Improve Your Environmental Monitoring Plan

Elevate your environmental monitoring with eLearning, consulting services, and digitalization.

ENVIROMAP®

E-Learning

Consulting Services

Execute Testing

Test for *Listeria* using one of our easy-to-use PCR, Immunoassay, or Culture Media solutions that are ISO and AOAC validated.

VIDAS® KUBE™

GENE-UP®

Chromogenic Plates

Identify Contaminants

Confirm the identity of microorganisms detected during screening and media growth.

API®

VITEK® COMPACT PRO

VITEK® 2 COMPACT

Investigate Incidents

Determine the root cause of your *Listeria* contamination and discover where it comes from, what it is, and how to eliminate it.

GENE-UP® TYPER

Genomics Analysis

Optimize Your Quality Control Process

Adapt your sampling plan based on your data modeling analysis and receive expert cleaning and sanitation support.

Adaptive Sampling Plan

Expert Support

Cleaning & Sanitation Partners

Listeria: Testimonials from Our Partners


CASE STUDY - FROM INSIGHT TO ACTION

Augmented Diagnostics with GENE-UP® TYPER for faster root cause analysis of *Listeria monocytogenes* in raw meat products.

BACKGROUND

A raw meat product producer wanted to better understand the root of their contamination.

Fresh raw meat products, from burger patties to fresh cuts, come with short shelf lives, implying strict quality control procedures. **The rapid release of products is a key challenge in obtaining rapid results.**

While working to improve their quality control process, they have been turning towards innovative technological solutions. They were looking for a way to type instead of serotype their strains to get more reliable results.

They wanted to be able to track the potential contaminations from livestock, slaughter to production and **understand the origin** of different contaminations **rapidly**, with **an easy method.**

How to get faster, reliable, information?

How do we get high definition results in-house?

How can we better understand the origin of the contamination?

METHOD

bioMérieux proposed an easy-to-use, rapid PCR solution GENE-UP®, with the GENE-UP® TYPER kit for faster root cause analysis.

In the case of a contamination, the GENE-UP®TYPER LMO kit allows for fast root cause analysis of the contaminating strain and its history like which farm or site it came from. The kit is performed on the GENE-UP® plattorm, bioMérieux's highly versatile PCR solution. on which they currently perform routine confirmation testing of *Salmonella* and *EHEC*.

The GENE-UP®PCR solution allows for a routine screening of a wide range of pathogens like ***Listeria spp. Listeria monocytogenes, Salmonella, EHEC*** and **viruses** as well as **quality indicators and spoilers**. It is the **only** PCR solution on the market which is able to piirform typing to obtain high resolution information in **only one hour** from a colony. It is faster, easier and more reliable than serotyping, which was the method they were previously using.

CONCLUSION

GENE-UP® TYPER is a component in an advanced solutions system called Augmented Diagnostics.

- Their trust in bioMérieux enables the proposal of a solution targetting their needs: to rapidly release products and **take informed action** in face of contaminations.
- GENE-UP® TYPER allowed them to have a **technologically advanced tool despite having little digitalization** in their laboratories.
- The tool allows them to better understand and control the quality of their products by adding a component of the Augmented Diagnostics approach.

RESULTS

GENE-UP® TYPER is rapid decision making tool for easy, fast and reliable insight for rapid product release.

- **Better understanding**
They are able to trace the history of certain strains by correlating the typing of the strains they had preserved from previous contaminations and between sites.
- **Faster results for faster release**
They are able to have reliable high definition results rapidly without doing serotyping.
- **Better logistics management**
Shortened holding time between production and export to their clients also helps gain time for delivery.
- **Critical time cut**
The shorter time-to-results enables better reactivity in case of contamination.

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Learn more about our Augmented Diagnostics Approach.

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Root Cause Analysis of *Listeria monocytogenes*

A leading raw meat producer faced contamination issues and needed a faster and reliable method to type strains and track contaminations from livestock to production.

Download Case Study


CASE STUDY - FROM INSIGHT TO ACTION

Augmented Diagnostics with GENE-UP® TYPER for root cause analysis of *Listeria monocytogenes* in the production of raw milk products.

BACKGROUND

A dairy product producer needed to assess the quality of milk upon arrival to make rapid decisions

Listeria monocytogenes is the key contaminant of concern in raw milk. Testing the presence of this contaminant is crucial to the decision of the production team. Raw-milk based products have a higher value than pasteurized milk based products. As such, they were looking for **a rapid and reliable diagnostics tool.** In some cases, *L. monocytogenes* was also found in final products after the milk had been cleared for production.

On top of this, the company wanted to have in house typing capability **to identify the origin** of different strains for **root cause analysis.**

How do we obtain rapid reliable results in house?

Are there different strains contaminating the raw milk?

Are the final products' contaminants coming from raw milk, from other raw materials or even from the environment?

METHOD

bioMérieux provided a 2 in 1 solution for routine detection and typing with GENE-UP® TYPER, the versatile PCR from bioMérieux.

While GENE-UP®, bioMérieux's PCR platform, grainled conduction of in house routine testing, the quality team was particularly interested in a tool allowing **root cause analysis** and understanding past contaminations.

GENE-UP® TYPER is a multiplex PCR kit based on selected genetic markers of the pathogen. **It predicts the strain's genome using an underlying reference genome database in a cloud-based and user friendly platform.** The solution allows for higher resolution information **24 hours after positive detection, or 1 hour from a colony**, for a more efficient root cause analysis through strain clustering.

CONCLUSION

GENE-UP® TYPER is a component in an advanced solutions system called Augmented Diagnostics

- By partnering with bioMérieux, the company was rapidly able to identify contaminated milk tanks to produce higher value raw milk based products.
- GENE-UP® TYPER use resulted in better root cause analysis.
- GENE-UP® TYPER allowed the company to provide consumer with safe and high quality products with a traceability based on typing.

RESULTS

GENE-UP® TYPER is rapid decision making tool based on easy, fast and reliable insight and identification of the source of contamination.

- **Production environment risk**
Better discrimination of raw milk suppliers thanks to a simple **in-house tracking of related strains**, without waiting for external lab results.
- **Extended environment assessment** Faster understanding on whether the contamination is **resident or transient** led to an improved environmental control and **root cause analysis.**
- **The Value**
Thanks to fast typing results , the company was able to optimize their raw milk cheese production, **saving significant costs.**

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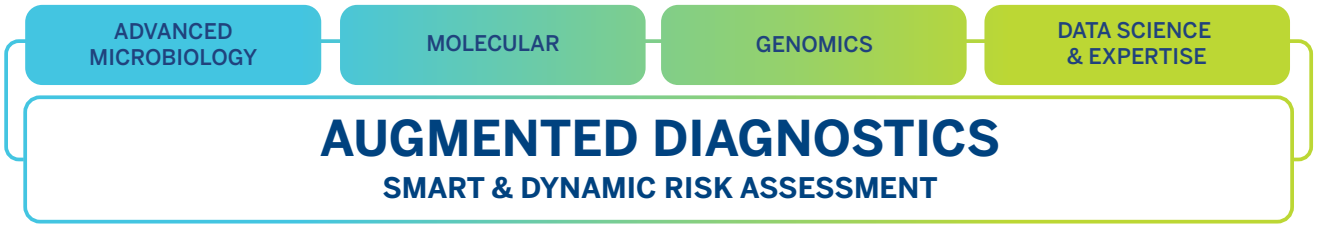
Listeria Contamination in Raw-Milk Based Products

A leading dairy producer needed to assess the quality of milk upon arrival to make rapid decisions.

Download Case Study

OUR INNOVATIVE APPROACH TO HELP YOU COMBAT *LISTERIA*

Preventing *Listeria* contamination requires strict hygiene, regular testing, and robust environmental monitoring programs. bioMérieux's Augmented Diagnostics approach combines cutting-edge microbial testing technologies, such as **Microbiology** and **Molecular Biology** with the latest **Genomics** and **Data Science** methodologies. This approach is further enhanced by an innovative mindset and the expertise of **industry professionals**.



LEARN MORE ABOUT THE AUGMENTED DIAGNOSTICS APPROACH ON OUR WEBSITE.

Sources:

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3. Hervé Gomichon ou Source: Mérieux NutriScience Expert Partners 2015
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