

BIOMÉRIEUX

GENE-UP® REAL-TIME PCR FOR FOOD SAFETY & QUALITY

Bringing Confidence to the Table



Your Trusted Partner in Augmented Diagnostics

PIONEERING DIAGNOSTICS

GENE-UP®: Simple & Versatile Real-Time PCR Solution

The GENE-UP® solution is based on Real-Time PCR technology for the detection of foodborne pathogens, spoilers and viruses in food, feed, and environmental samples.

With GENE-UP®, you can perform more than 30 testing applications, addressing the testing needs for all food and beverage segments.

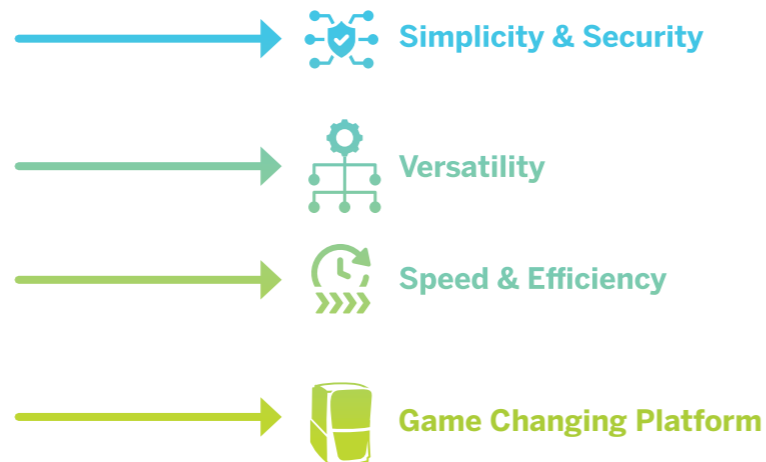
By simplifying workflows, GENE-UP® increases lab efficiency, saves time, and reduces the chance of errors. With faster, more reliable results, the lab becomes a true partner that adds value across the entire operation, shifting from a bottleneck to a performance driver.

GENE-UP®: A Game Changing Platform

The Science

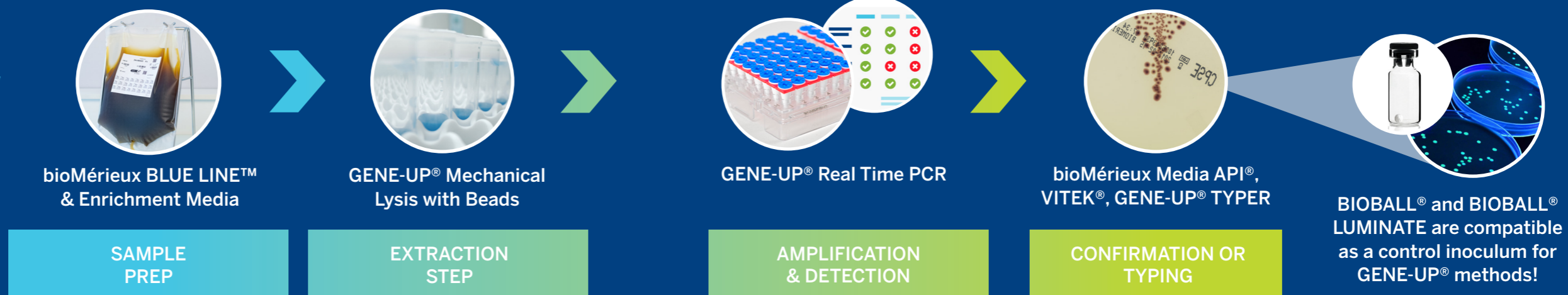
- Only two pipetting steps, 5 minute lysis step, and multi-colored PCR plates
- One platform for over 30 applications
- Same workflow for *E. coli* O157, *Listeria* spp. & *L. monocytogenes*, *Salmonella*, *Cronobacter*, etc.
- Offers not only detection but also quantification, clustering, custom molecular assays, and same shift testing approach

The Impact



With a Simple Workflow

The workflow of GENE-UP® is very easy to use, which reduces training requirements and improves accuracy and reliability.



The xPRO™ Program: Accelerating Innovation with Custom Molecular Solutions

The xPRO™ Program fast-tracks the development of advanced, custom molecular assays by partnering directly with industry leaders. Integrated with GENE-UP®, xPRO™ brings rapid detection and root cause analysis to every stage of production - helping you minimize risk, boost efficiency, and tackle food safety challenges with confidence.



The GENE-UP® ecosystem features xPRO™ kits including:



GENE-UP® PRO BREW
Rapid beer spoilage detection



GENE-UP® PRO ACB
Detects *Alicyclobacillus*, predicts guaiacol spoilage



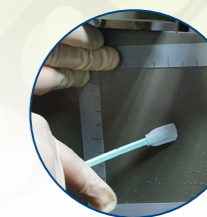
GENE-UP® PRO HRM
Detects viable heat-resistant molds



GENE-UP® PRO QUANT
Salmonella
Quantifies *Salmonella* without enrichment step



GENE-UP® PRO NUTRAPLEX™
Detects *E. coli*, *Salmonella*, and *S. aureus* in one test



GENE-UP® ENVIROPRO™
Environmental *Salmonella* and *Listeria* detection combined

Globally Certified Assays

The GENE-UP® ecosystem combines AOAC, AFNOR, and Microval validated test kits ensuring consistent results across all applications.

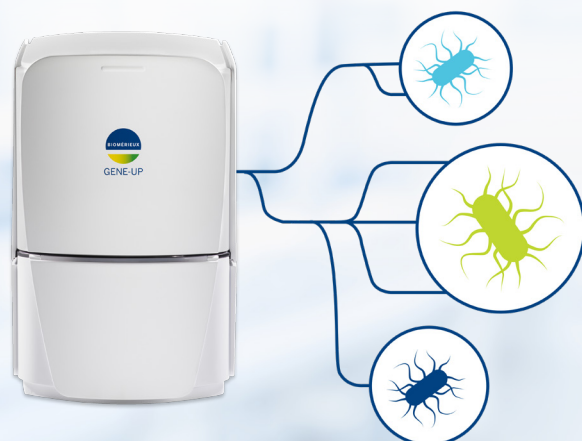
Product Ref.	Product Name	Targets	AFNOR	AOAC RI	MicroVal
IS1100	GENE-UP® <i>Campylobacter</i>	<i>Campylobacter jejuni</i> , <i>C. coli</i> , and <i>C. lari</i>		✓	
421920	GENE-UP® <i>Cronobacter</i>	<i>Cronobacter</i>	✓	✓*	
423107	GENE-UP® <i>E. coli</i> O157:H7	<i>Escherichia coli</i> O157:H7		✓*	✓
423443	GENE-UP® <i>Enterobacterales</i>	<i>Enterobacterales</i> (including <i>Enterobacteriaceae</i>)			Pending
IS1071	GENE-UP® ENVIROPRO	<i>Salmonella</i> and <i>Listeria</i> species		✓	
423106	GENE-UP® <i>Listeria</i>	<i>Listeria spp.</i>	✓	✓*	
423107	GENE-UP® <i>Listeria monocytogenes</i>	<i>Listeria monocytogenes</i>	✓	✓*	
424143	GENE-UP® Pathogenic <i>E. coli</i>	Pathogenic <i>E. coli</i>		✓	
IS1086	GENE-UP® PRO ASPERGILLUS	<i>Aspergillus</i> species (<i>A. flavus</i> , <i>A. fumigatus</i> , <i>A. niger</i> & <i>A. terreus</i>)		✓	
IS1096	GENE-UP® PRO NUTRAPLEX™	<i>Escherichia coli</i> , <i>Salmonella</i> <i>spp.</i> and <i>Staphylococcus aureus</i>		✓	
IS1129	GENE-UP® PRO QUANT SALMONELLA	<i>Salmonella spp.</i>		✓	
IS1094	GENE-UP® PRO STEC / SALMONELLA	<i>stx eae</i> and <i>Salmonella spp.</i>		✓	
423105	GENE-UP® <i>Salmonella</i>	<i>Salmonella spp.</i>	✓	✓*	
423127	GENE-UP® SEST	<i>Salmonella</i> Enteritidis <i>Salmonella</i> Typhimurium	✓	✓	
423109	GENE-UP® STEC <i>stx</i> & <i>eae</i>	Virulence genes		✓	✓
414154	GENE-UP® STEC TOP6	Shiga Toxin-Producing <i>Escherichia coli</i> Top 6 O Groups		✓	✓

*Also validated AOAC OMA

GENE-UP® TYPER: Now You Know

GENE-UP® TYPER empowers food producers to **rapidly characterize and trace contamination back to its source**, leveraging advanced genomics and machine learning for cluster identification and historical tracking — enabling faster corrective actions and reducing the risk of recurrence.

Available for *L. monocytogenes* and soon for *Salmonella*



Testimonials from Our Partners

bioMÉRIEUX

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 strict 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 product serotypes faster to get more reliable results.

They wanted to be able to track the potential contaminants 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 you get high resolution results in-house?
How can you better understand the origin of the contamination?

METHOD
bioMérieux proposed an easy-to-use, rapid PCR solution GENE-UP[®] TYPER 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 when farm or site it came from. The kit is performed on the GENE-UP[®] platform, 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 *Vibrios* as well as quality indicators and spoilage. It is the **only** PCR solution on the market which is able to perform 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 targeting 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.

bioMérieux.com
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

Listeria Contamination in Raw-Milk Based Products

A dairy producer needed a rapid and reliable way to assess milk quality upon arrival to support production decisions. *Listeria monocytogenes*, the key contaminant of concern in raw milk, carried a significant risk, sometimes even detected in final products after clearance.

The challenge was to implement fast and accurate testing to prevent contamination and safeguard product integrity.



Download Case Study

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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 you 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, granted 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.

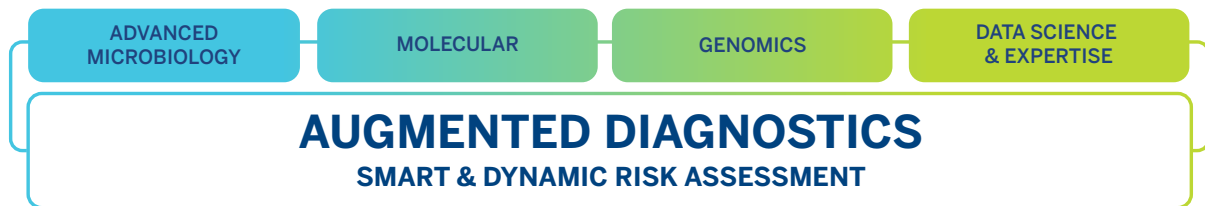
- Production environment risk**
Better discrimination of raw milk suppliers thanks to a simple **in-house tracking** of related strains, without waiting for external lab results.
- Extended environment assessment**
Faster understanding on whether the contamination is **resident or transient** led to 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**.

bioMérieux.com
Learn more about our Augmented Diagnostics Approach.

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THE AUGMENTED DIAGNOSTICS APPROACH: FROM TEST RESULTS TO ACTIONABLE INSIGHTS

bioMérieux's Augmented Diagnostics approach combines cutting-edge microbial testing technologies (including **Microbiology** and **Molecular Biology**) with the latest **Genomics** and **Data Science** methodologies, as well as an innovative spirit and **industry experts**.



MICROBIOLOGY & MOLECULAR



SAMPLE & MEDIA PREPARATION

- BIOBALL®
- BLUE LINE™
- Culture Media



SPOILERS & QUALITY INDICATORS

- TEMPO®
- D-COUNT®
- BACT/ALERT®
- GENE-UP®
- VERIFLOW™



PATHOGEN DETECTION

- VIDAS® KUBE™
- Chromogenic Plates
- GENE-UP®



MICROBIAL IDENTIFICATION

- VITEK® MS PRIME
- VITEK® COMPACT PRO
- API®



CUSTOM MOLECULAR BIOLOGY

- The xPRO™ Program

AUGMENTED-DX PORTAL

Data Insights, Investigations, Reporting



INVESTIGATION & ROOT CAUSE ANALYSIS

- Pathogen and Spoiler Mapping (*whole genome sequencing, metagenomics*)
- Microbiome Discovery (*metagenomics*)
- GENE-UP® TYPER



DIGITALIZATION

- ENVIROMAP®
- VILINK®



PEOPLE & PROCESS UPSKILLING

- EM E-Learning
- Process Optimization
- EM Consulting Services

GENOMICS & ENVIRONMENTAL MONITORING EXPERTISE



LEARN MORE ABOUT THE AUGMENTED DIAGNOSTICS APPROACH ON OUR WEBSITE.