

Protecting your brand. WE CAN help.

Food and Beverage Safety Analysis



Safeguarding food safety—today and tomorrow

We're always looking ahead to help you meet the increasing analytical food and beverage testing demands—in your timeframe, and with the high degree of accuracy your consumers and clients expect. Our broad range of innovative chromatography and mass spectrometry instruments, data management and analysis software, sample preparation and separation consumables and general laboratory products will help you achieve your food safety analysis goals. We offer complete end-to-end food testing solutions and educational resources so that you can keep your focus where it should be—delivering safe, high-quality food products.



Address virtually every food and beverage analyte

When it comes to food safety and quality testing for unwanted residues, contaminants, adulteration and more, our start-to-finish workflows enable regulatory and food and beverage analysis laboratories meet the challenges of today and prepare for the requirements of tomorrow. From sample input to data output, we can help your team research new methods, ingredients and packaging solutions, as well as reduce the time to achieve out-of-the box results and provide compelling productivity and regulatory compliance.

Testing service labs

Deliver productivity improvements and access capabilities to maintain a competitive edge



International associations and government labs

Establish standard methods of analysis to ensure the safety and integrity of food products



Manufacturers

Research new ingredients and packaging approaches while ensuring safe product release



Academic researchers

Research and discover the impact of emerging food concerns



Our shared vision: safer, healthier food

A partnership with our team brings a dedicated focus to your most pressing goals—improving processes, limiting interruptions, balancing operational costs, ensuring your customer needs are satisfied, maintaining your reputation for on-time dependability, and ensuring communities are safe. Your success is our goal—and we are the resource to help you deliver. From laboratory inception to final report-out to your customers, Thermo Fisher Scientific is your dedicated strategic partner.

Address a wide variety of food and beverage analytes

From sample input to data output, we can help your lab run seamlessly while enabling a wide range of food and beverage testing with technology advancements that transform your output, whether you're researching the next ingredient or packaging material, or ensuring everyday products are fit for release.

Pre-configured and validated out-of-the-box solutions

Solutions designed to meet food and beverage testing regulations and deliver robust, reproducible results for fast implementation and optimum performance in analytical testing labs.

Focus on results, not instrument operation

Work smarter, not harder. Enable easy rotation of your lab technicians with workflow-driven software solutions that streamline everyday tasks in smarter ways—from instrument optimization and troubleshooting to routine method development and results reporting.

Access connected solutions to manage your data stream and day-to-day operation

Today's labs need to become increasingly paperless; but they also need to be connected. We can help you transform your business; enabling you to accelerate your scientific research and streamline lab operations.

Expand test menus while improving operational excellence

Keep your laboratory running seamlessly while enabling test menu expansion that drives new revenue sources—all with new standards in analytical instrument performance. Because so much rides on the work our customers do, we strive to offer state-of-the-art solutions. We understand the importance of improving the bottom line and minimizing the risk of recalls to protect consumer safety. As regulatory standards evolve, you need analytical workflows that evolve as well to meet new requirements.

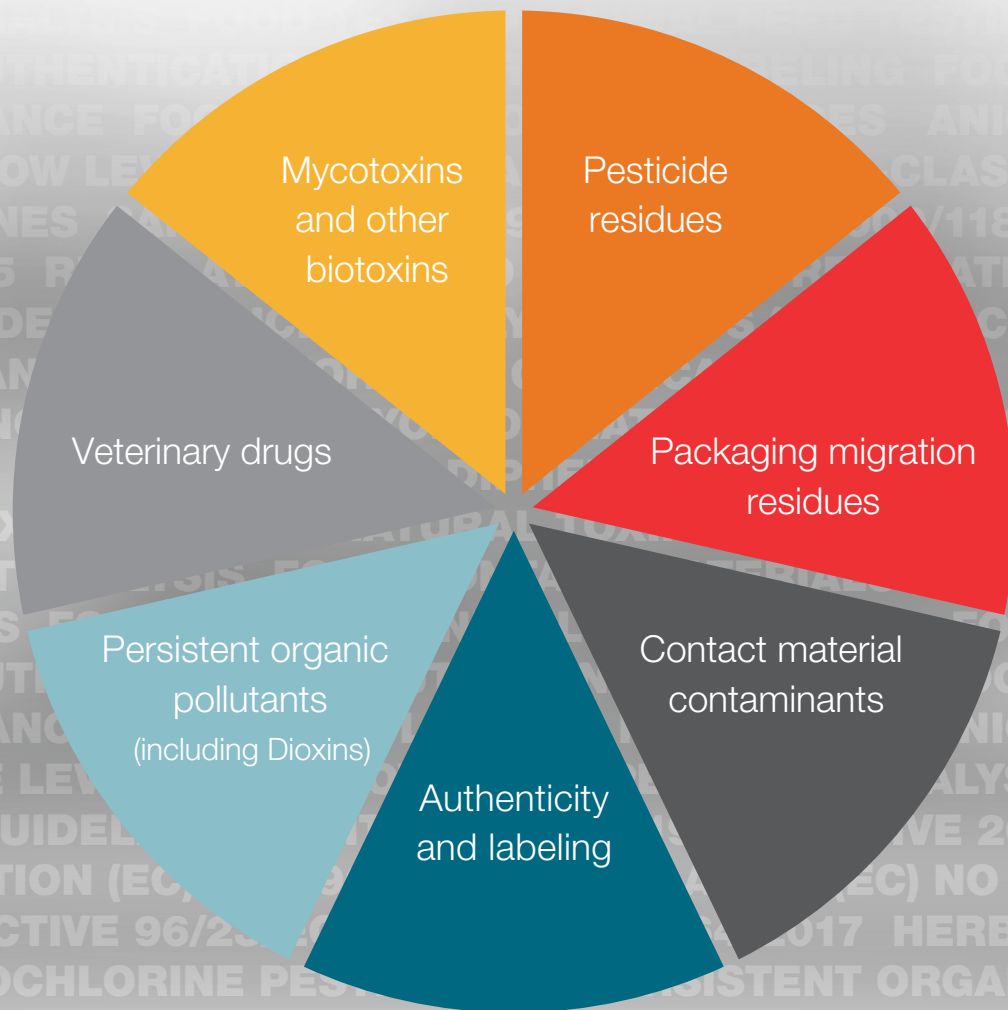
Collaborate at every phase of your contract testing business

We're prepared with the most comprehensive laboratory capabilities, with dedicated support to meet everyday demands, as well as the focused attention needed to help overcome barriers to your lab's success.



Spectrum of capabilities

Produce quality results with automated sample preparation, ready-to-run method templates, and data analysis solutions that streamline tasks for lab technicians. Guided assistance is available for each step, from instrument optimization and troubleshooting to routine method development and results reporting. Our complete end-to-end food analysis workflow solutions and educational resources let you keep your focus where it should be—on delivering safe, high-quality food products that consumers expect.



WE CAN help



Food fraud and integrity analysis

Trust your food and beverage testing is all it should be. We help manufacturers, as well as government and contract testing laboratories globally, to meet their needs with the intelligence driven technology they need; enabling faster and more efficient verification of food and beverage, purity and ingredient composition every day.



Separate your results from the status quo

We offer a range of solutions to ensure reliable elemental analysis, as well as overcome the testing challenges of nutritional, chemical, and ingredient verification. We can help you to push the boundaries of your research or to be prepared to meet future legislation requirements.

Adulteration and integrity testing techniques	Parameters enabled
Mass spectrometry (GC-MS, LC-MS)	Volatile components, phenolic compounds, allergen peptides
Chromatography (HPLC/IC)	Amino acids, carbohydrates, phenolic compounds
Atomic absorption and emission spectroscopy, ICP/MS	Simultaneous determination of elemental composition
Isotope Ratio Mass Spectrometry (IRMS)	Isotope ratios of natural variations
Infrared spectroscopy (NIR, FTIR)	Spectral profile, characteristic frequencies
Raman spectroscopy	Spectral profile, characteristic frequencies

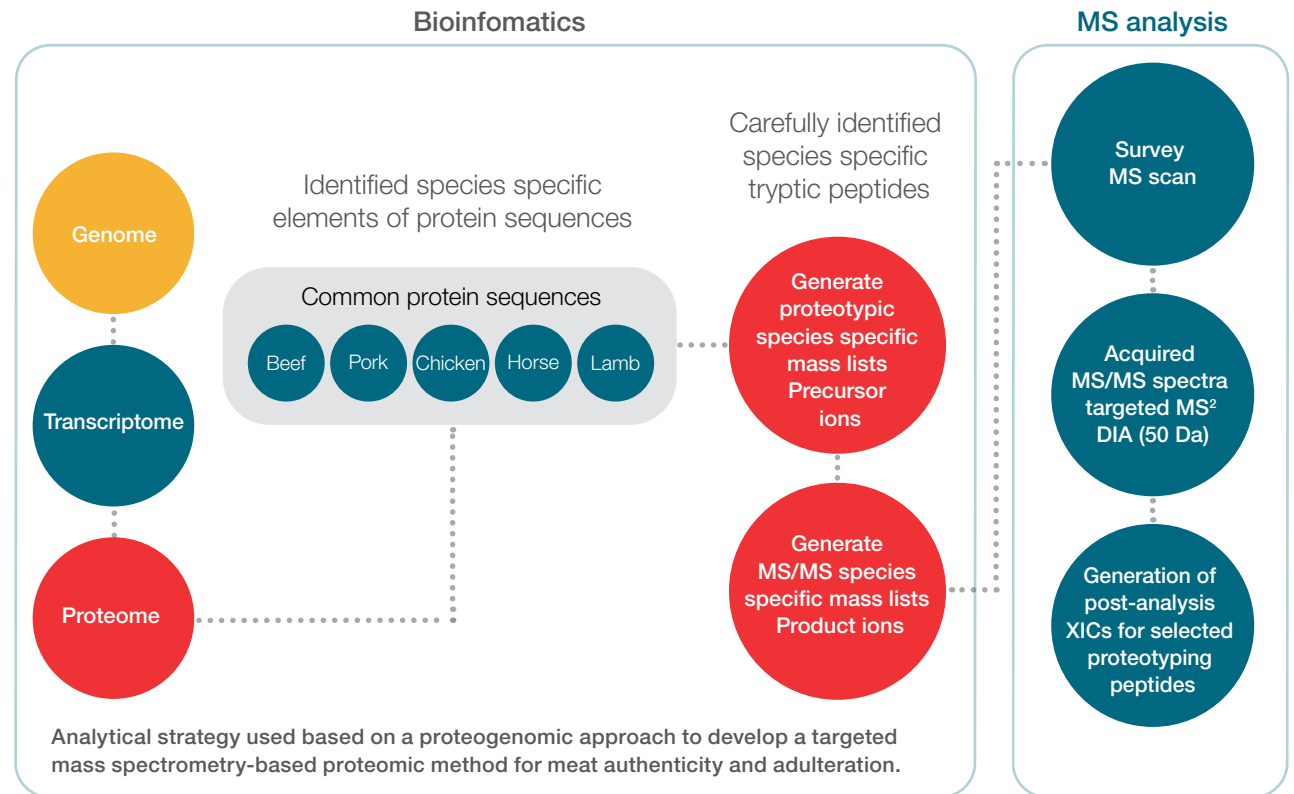
Find out more at [thermofisher.com/food-authentication](https://www.thermofisher.com/food-authentication)

Authenticity and speciation identification analysis

Combat food fraud with next generation sequencing and high resolution mass spectrometry workflows. Let us help you to protect your customers and your reputation with confidence against intentional, or accidental adulteration.

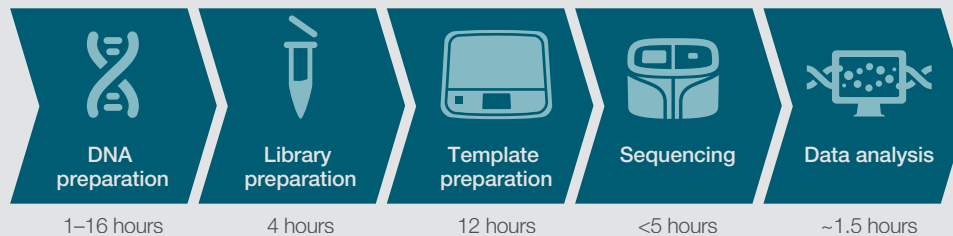
Food authenticity and speciation with start-to-end workflows

Thermo Scientific™ Orbitrap™ high-resolution, accurate-mass (HRAM) GC-MS and LC-MS workflows enable total confirmational confidence in authenticity and adulteration testing with high specificity and sensitivity.



NGS and PCR fast testing workflows

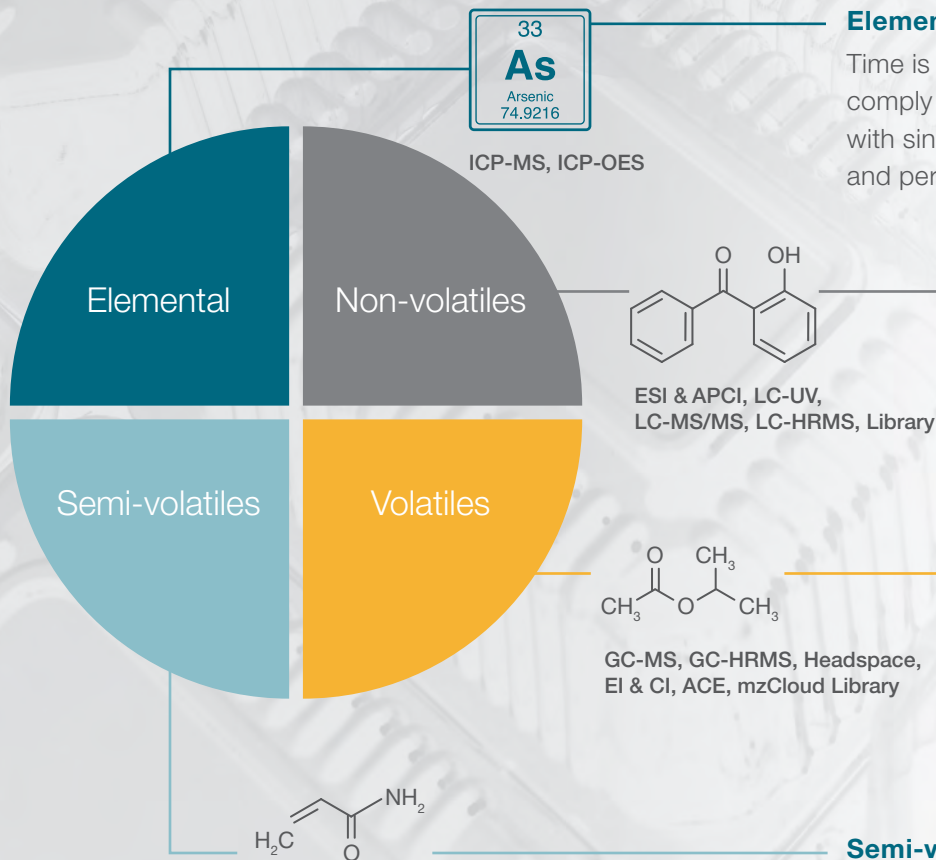
Enable sensitive meat, fish and plant species screening and identification with next generation sequencing (NGS) or simple to use PCR workflows for species identification using targeted DNA detection.



Rapid results: sample to next generation sequencing results in as little as one day.

Food contact materials

The increased demand for convenient single-use packaging and the risk evaluation for non-intentionally added substances (NIAS) because of recycled content makes testing more complex for food manufactures in order to protect consumers. We can help improve compliance testing while helping you support your R&D and quality departments' increasing needs.



mzCloud™ mass spectral library,
Thermo Scientific™ Compound Discoverer software
with Thermo Scientific™ mzLogic algorithm

Elemental impurities

Time is valuable. Automate elemental impurity setup and analysis to comply with food grade packaging and contact materials local regulations with single-click intelligent driven software. Access the limit of detection and performance reliability you need by ICP-MS or ICP-OES.

Non-volatiles compounds

Ever-changing polymer additives and monomers represent an ongoing analytical challenge. Make the most difficult to identify easy with a combination of Orbitrap HRAM, highly curated online and offline spectral databases, mzLogic and more to simplify success.

Volatiles compounds

Improve sample preparation and reduce turnaround time while significantly reducing the cost per analysis with solutions designed to offer ease, uptime, and hands-free automation. The addition of headspace autosamplers to GC and GC-MS workflows can increase sample turnaround time and lower costs for high-throughput laboratories.

Semi-volatiles compounds

Demand confident identification of unknowns and quantitation of lowest levels with an Orbitrap HRAM, GC-MS or lowest limits of detection and flexibility with a GC-MS solution.



Factors that impact the migration of chemicals from packaging into food and beverages



Heat

Higher temperatures increase leaching



Food type

Fatty/acidic foods and liquids have influence on migration



Time

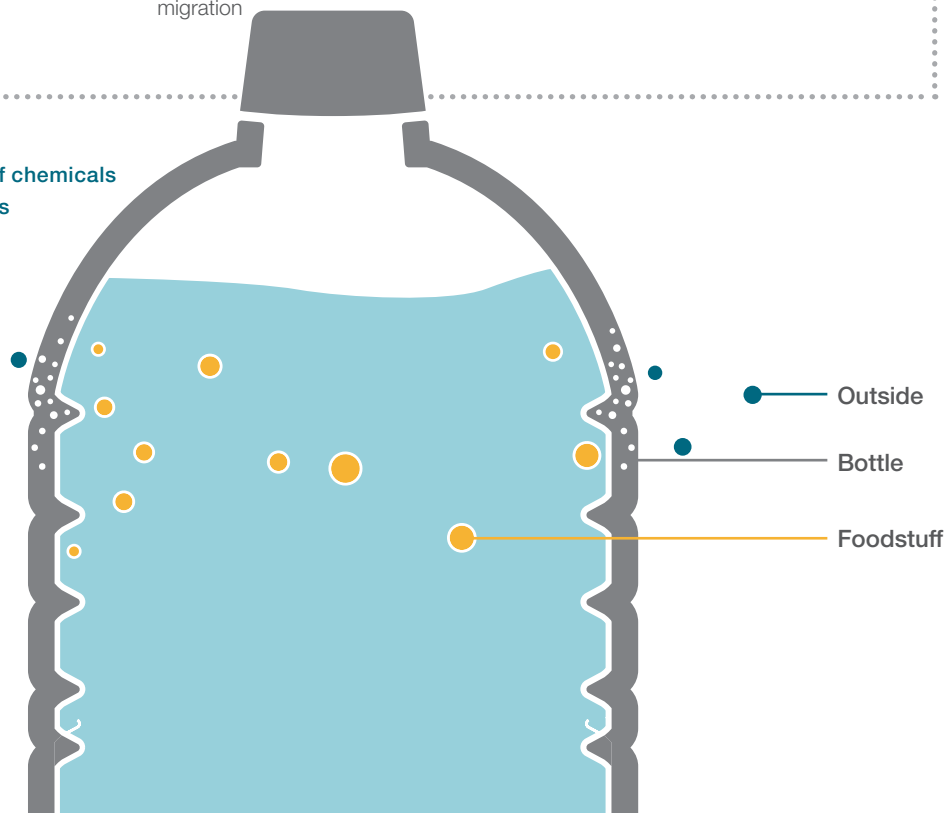
Long storage time increases leaching



Packaging size

Smaller packaging leaches more per volume of food

Example of migration of chemicals into food and beverages



“The possibilities are endless to exploit retrospective and untargeted potentialities with high resolution Orbitrap technology to look closer for the unexpected together with the targeted compounds that you have to look for.”

—Dr. Michele Suman, Food Chemistry & Safety Research Manager at Barilla G. e R. Fratelli

Find out more at [thermofisher.com/contact-analysis](https://www.thermofisher.com/contact-analysis)

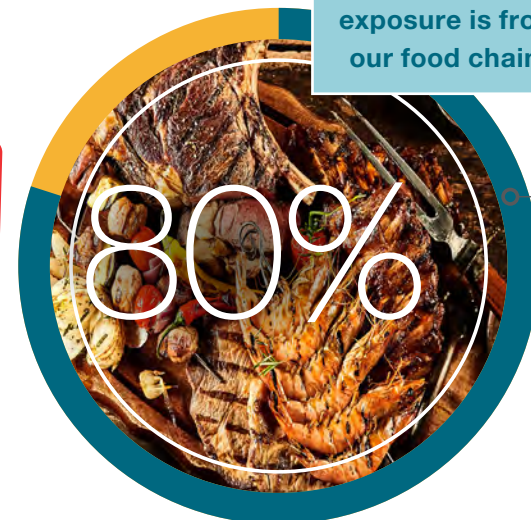
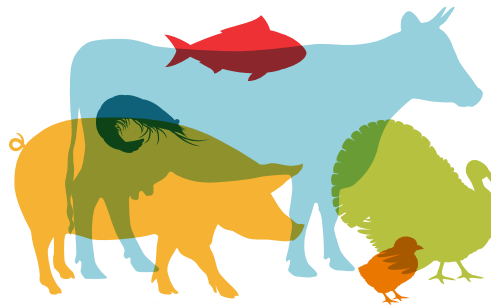
Persistent Organic Pollutants contaminant analysis

For over a decade, the global scientific community has chosen Thermo Scientific solutions for their superior performance in the routine quantitative analysis of Dioxins and Persistent Organic Pollutants (POPs). We offer a variety of workflows to flexibly scale your test method options while enabling the high-throughput, robust performance and high-confidence results you need to meet your food and feed sample testing goals.

Scientists continue to study exposure to POPs in order to understand the adverse health effects as they accumulate in the fatty tissue across the food chain

Gold standard for Dioxin and other POPs analysis

The compact, DFS Magnetic Sector GC-HRMS offers dual data for increased productivity, a smaller footprint to maximize lab space, better utilization of the mass spectrometer to reduce energy consumption, and the flexibility and sensitivity to be used for the quantification of any Dioxin and POP. Complete worldwide compliance ensures that you can keep up with any official Dioxins, PCB, or PBDE method regulatory requirements.



Government regulatory bodies worldwide are increasingly concerned about dioxins and persistent organic pollutants in our food and are strictly monitoring specific foods with the goal of identifying ways to reduce dietary exposure.

* Green Facts: Dioxins. www.greenfacts.org/en/dioxins/index.htm. October 2018.

Find out more at thermofisher.com/pops-analysis

To address the need for greater testing capacity in control labs because of the increasingly global nature of the food supply chain, we developed our Dioxin Analyzer workflow.

WE CAN help

Simplify the complexity of dioxin analysis

Increase laboratory productivity with our Dioxin Analyzer. With it, you can address the high cost and complexity faced by scientists testing food and animal feeds for low levels of dioxins/furans and dl-PCBs. This analyzer includes all components needed—consumables, hardware, software and built-in instrument and data processing methods. All components are pre-configured and tested from your single trusted supplier, Thermo Fisher Scientific.

“Creating robust interlaboratory validation of dioxin determination was an important step in this project, particularly as the workstream would also validate the virtual laboratory concept. We knew the Thermo Fisher GC-MS/MS technology was able to meet the analytical criteria demanded by the European Union regulatory requirements; it provides the depth and breadth of analysis without the technical expertise needed for magnetic sector HRMS. This means the laboratories could use multi-skilled scientists with minimal additional specialist training.”

—Martin Rose, Fera Science Ltd.



Accelerate extraction and concentration

Explore the option of faster sample preparation using an automated system for the micro-sampling and injection of small volumes of extracts, for dioxin analysis and a variety of other food testing applications.

Find out more at thermofisher.com/dioxinalyzer

Streamline your path to multi-residue testing

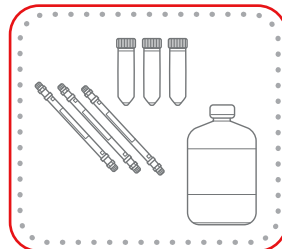
Today's laboratories need innovative techniques and solutions to allow simultaneous analysis for a vast number of compounds while reducing costs and increasing throughput. Streamline your ability to identify and quantify food residues and contaminants more efficiently with easy-to-deploy workflows and solutions while meeting global regulations.

Emerging residue and contaminant analysis

Access sensitive and selective ion chromatography (IC), liquid chromatography (LC) or gas chromatography (GC), and mass spectrometry (MS) methods for simultaneous analysis of residues and contaminants due to their co-occurrence and complexity in food products.

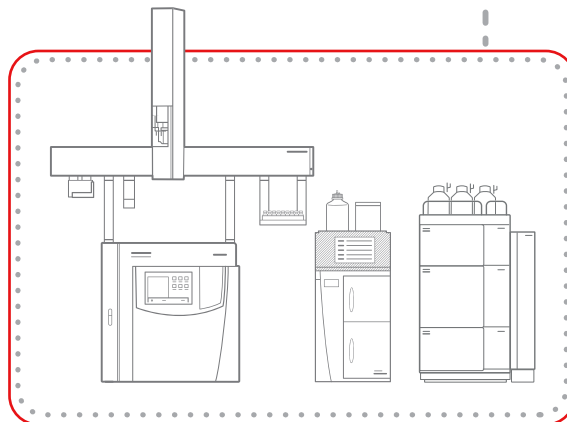
Sample preparation

Simplify and accelerate sample extraction base on your needs with Thermo Scientific™ QuEChERS and automated solutions



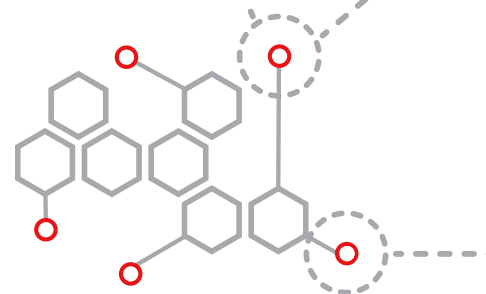
Chromatographic separation

Flexibility with performance to accomplish more from method development to routine analysis with HPLC, UHPLC, GC and IC capabilities



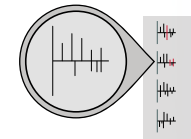
Compound Discoverer software provides valuable insights

Efficiently extract high confidence data from information-rich HRAM molecular data



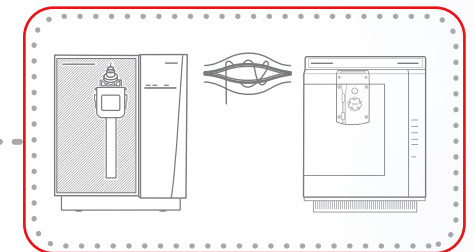
mzLogic algorithm offers fast, automated logical analysis

Eliminates thousands of candidates and hours of work



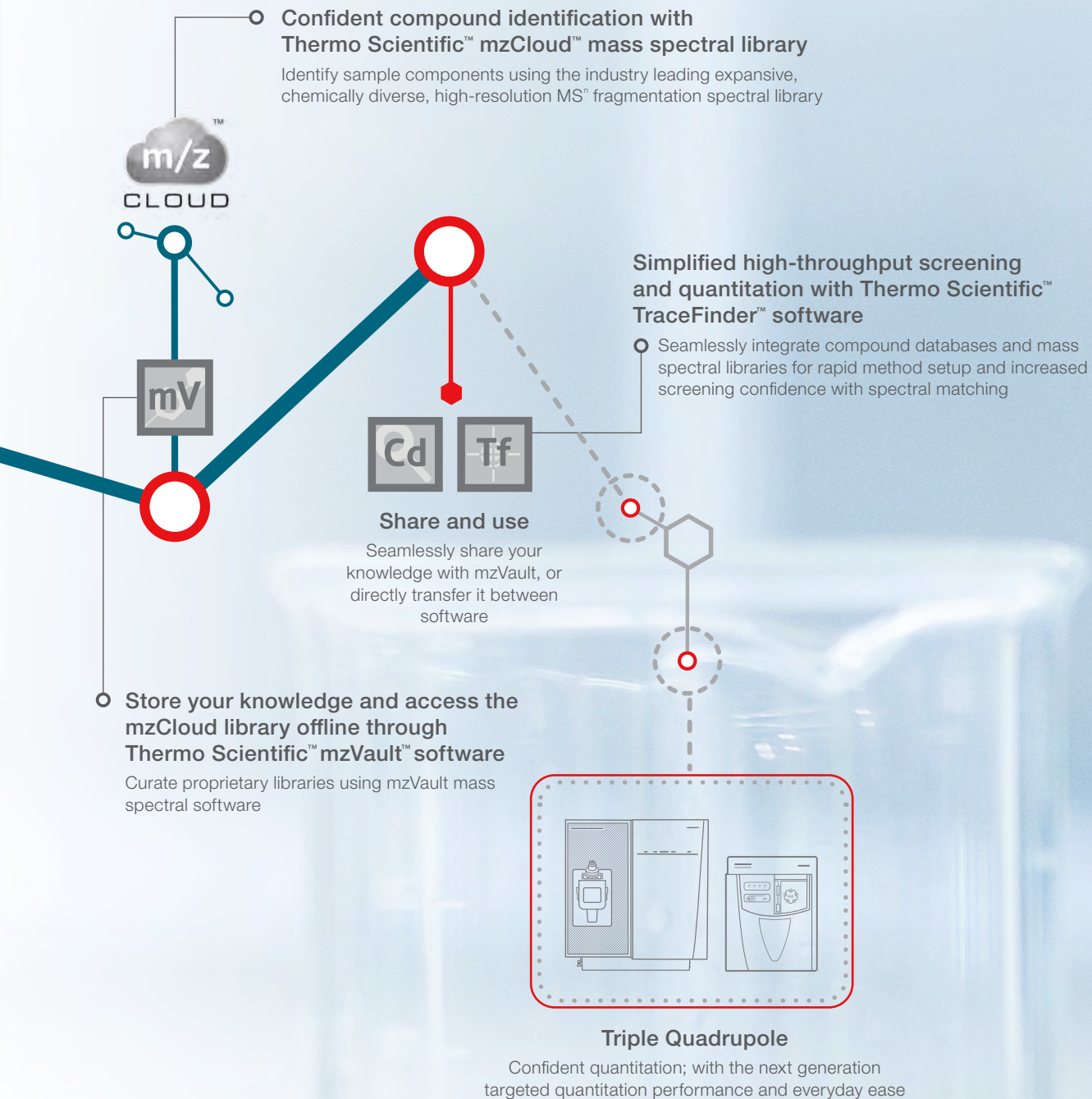
Thermo Scientific™ AcquireX™ intelligent data inclusion acquisition

Generate meaningful MS² spectra for more sample-relevant compounds



Quantitative Orbitrap HRAM

Making genius simpler; unknown screening to quantitation with advanced high resolution accurate mass



“Each year, food control laboratories have to provide ever more demanding identification capabilities for target or non-target compounds with very different physicochemical properties. Mass spectrometry-based workflows will increasingly solve these challenges. The possibilities offered by Thermo Scientific Orbitrap HRAM mass spectrometry technology coupled to UHPLC, GC and IC are unmatched in this regard, while, at the same time, guaranteeing quantitative results of the highest quality.”

—Amadeo Rodríguez Fernández-Alba, Head of European Union Reference Laboratory for Pesticide Residues in Fruit and Vegetables and Professor, University of Almería

Multi-residue pesticide analysis; always what's next

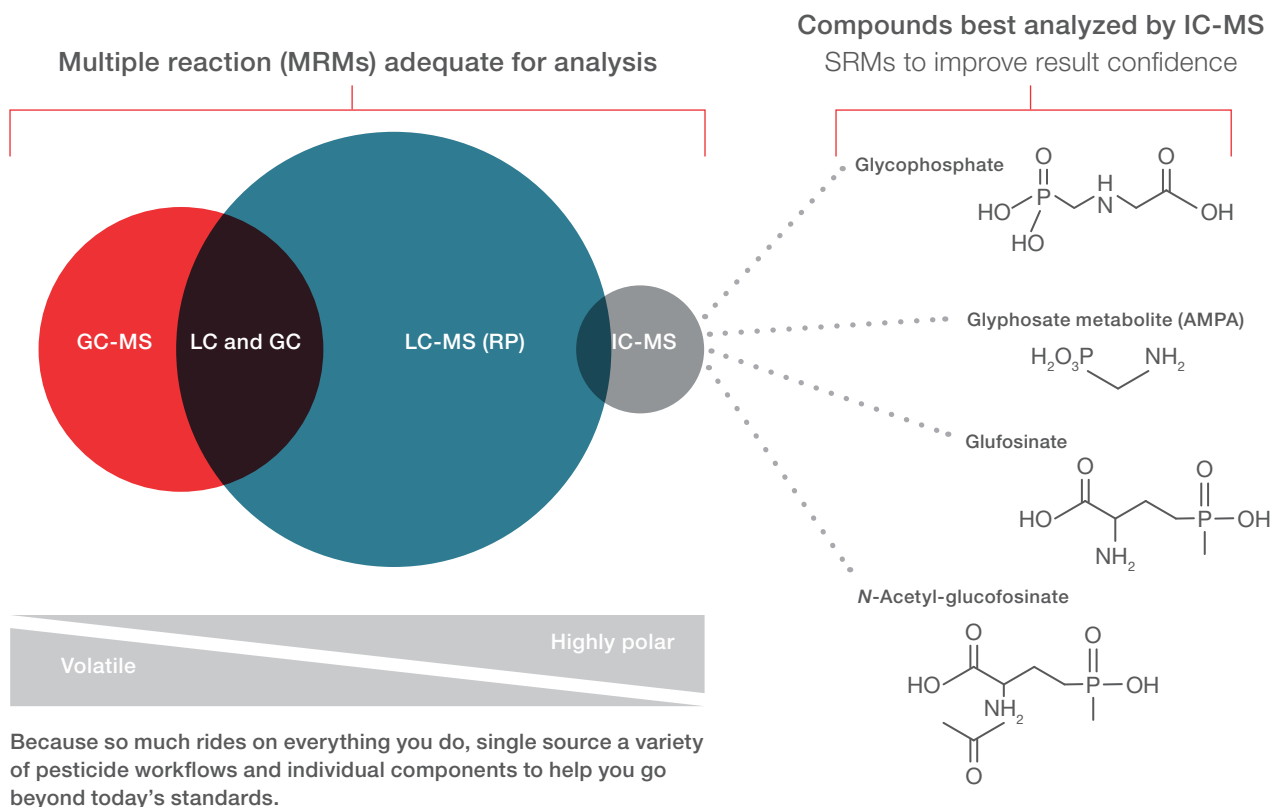
Now you can analyze more than hundreds of pesticides and their metabolites while processing hundreds to thousands of samples each year. From sample input to data output, we have you covered. Our multi-residue solutions, can help you minimize the risk of recalls, achieve savings and safeguard lives.

“The coupling of the Dionex ion chromatography system with a high-sensitivity mass spectrometer gives us the advantage of looking at ultra-low levels of ionic and polar pesticides in difficult matrices without the need of derivatizing the sample. I wish we had started using IC-MS/MS sooner, because it is truly the solution to the challenges associated with polar pesticides analysis.”

Katie Banaszewski, NOW Foods, Bloomingdale, IL

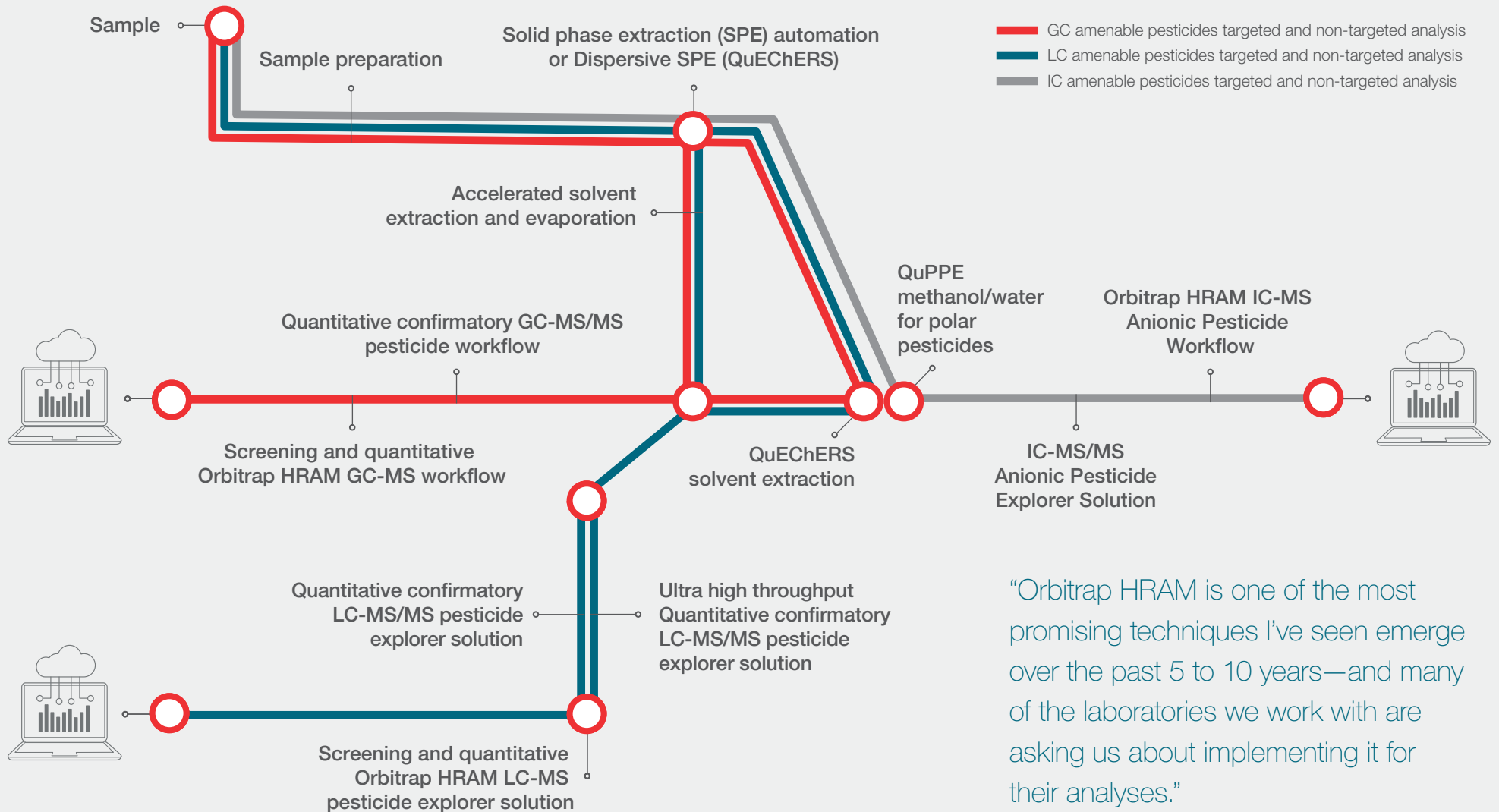
Screening and confirmatory multi-residue pesticide testing

When accurate, reproducible, and rapid separations are critical, our solutions help you successfully analyze the full spectrum of pesticide residue compounds in a variety of complex matrices.



Pesticide analysis solutions and workflows

Whether you need pre-configured validated pesticide solutions for speed and convenience or the flexibility to build your own workflow, we can help.



“Orbitrap HRAM is one of the most promising techniques I’ve seen emerge over the past 5 to 10 years—and many of the laboratories we work with are asking us about implementing it for their analyses.”

—Amadeo R. Fernández-Alba, Head of European Union Reference Laboratory for Pesticide Residues in Fruit and Vegetables and Professor, University of Almería

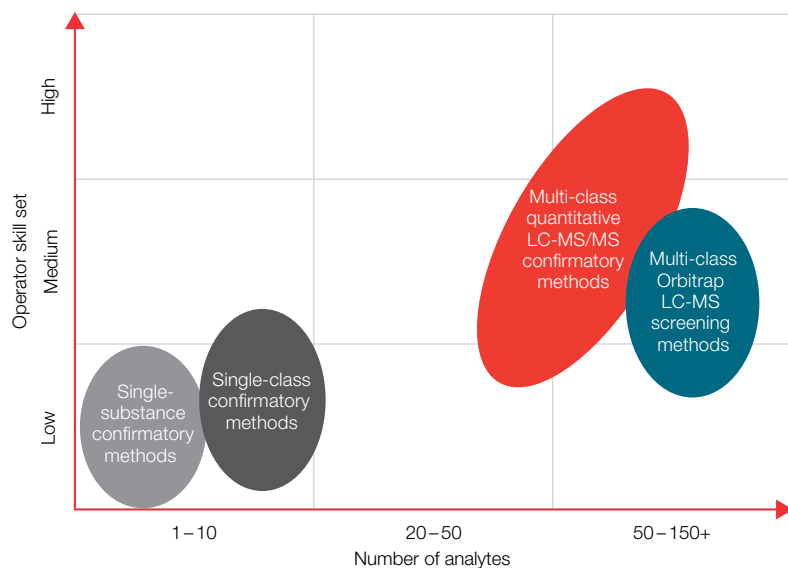
Find out more at thermofisher.com/pesticide-residues-analysis

Multi-class veterinary drug testing strategies

Expand your veterinary-drug testing capabilities today with start-to-finish LC-MS multi-class veterinary drug analysis solutions that offer robust, reliable, and sensitive results while addressing global regulatory requirements. If you are planning to add capacity or insource screening and confirmatory methods, we can help.

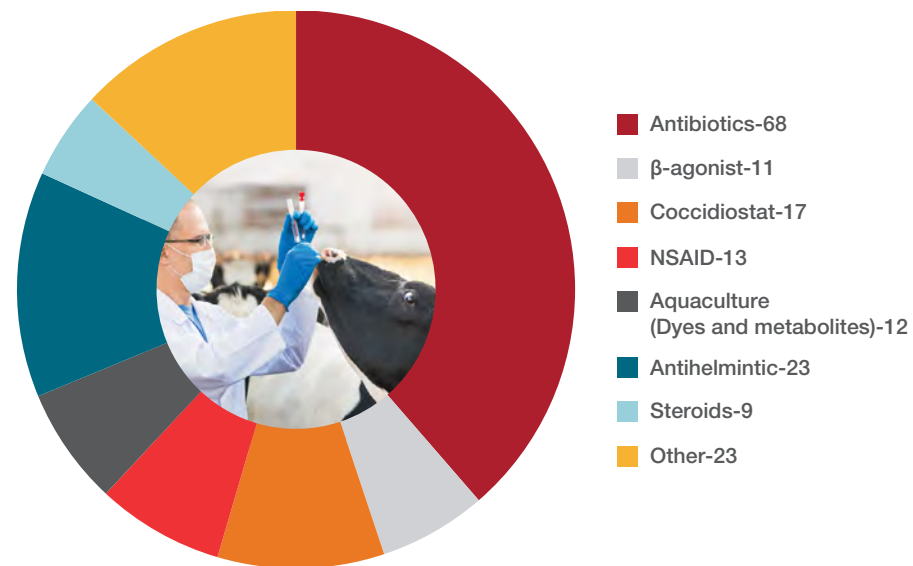
Minimize risks of exceeding maximum residue limits

Veterinary drugs constitute a complex group covering a couple of hundred substances representing different chemical classes and therapeutic areas. The relevance and risk of monitoring depends on the sample, country of origin, destination and stage of sampling within the food supply chain.



While single-class testing is rapid, it doesn't offer the selectivity and effectiveness producers and consumers need to ensure food safety around the globe.

Our ready to deploy Thermo Scientific™ VetDrugs Explorer Collection was developed to address the specific regulations and growing concerns of the European Union (EU) and other countries. We developed the protocols and approach to ensure your laboratory success.



Compound classes with number of analytes evaluated during the development of the VetDrugs Explorer Collection.

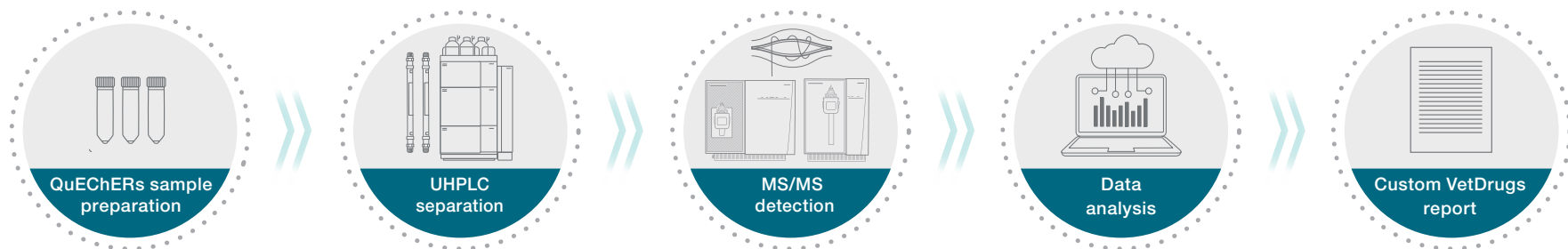
“The Orbitrap Exploris HRAM mass spectrometer allows us to react to emergency testing situations in a variety of matrices without having to do a lot of method development. This enables us to provide high quality data for veterinary drug residue testing to our clients.”

—Dwayne Schrunk, Laboratory Manager of the Analytical Chemistry Services, Iowa State University



VetDrugs Explorer solutions

This start-to-finish convenient targeted quantitation workflow kit comprises a set of validated end-to-end LC-MS/MS multi-residue veterinary drug analysis protocols for today and tomorrow’s veterinary drugs analysis.



With automation and multiplexing the approach is cost efficient and compared to conventional screening and confirmatory methods, LC-MS can cover a large set of targeted substances including transformation or metabolic products with high selectivity and sensitivity.

WE CAN help

Find out more at thermofisher.com/vet-drugs-analysis



Emerging, masked mycotoxin threats

We can help you fine-tune testing strategies to address the perennial multiple variable mycotoxin identification problem while protecting your animals and end consumers.

When food producers think of mycotoxins, they often think of the big six: aflatoxin, deoxynivalenol (DON), T-2 toxin, fumonisin, ochratoxin and zearalenone. However, the presence of emerging or masked mycotoxins presents a risk because most of the 600+ known mycotoxins often go undetected today. Other variables creating testing challenges are:



Climate change

Hot dry weather increases presence of aflatoxins—a group of carcinogenic mycotoxins produced by *Aspergillus* molds. Corn growers, livestock producers and animals fed aflatoxin-contaminated grains can be sources of significant health hazards.¹



Chronic exposure

Low-level mycotoxins can economically impact food producers. Research shows chronic exposure when livestock and poultry are fed below regulatory threshold levels—may impact the immune system, intestinal integrity and physiology of animals.^{2,3}



Oxidative stress

Research has shown mycotoxins alter expression of multiple primary antioxidant enzymes which can lead to inflammation, altered cellular metabolism and eventually cell death.⁴

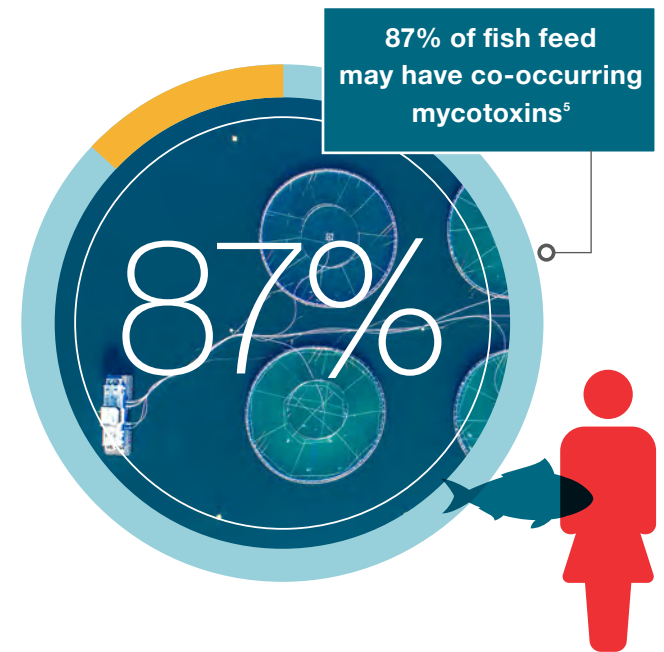
¹Hurburgh, Charles, et al. 2012. Aflatoxin in Corn. Iowa State University Extension and Outreach publication PM1800.

²Romero, A., et al. 2016. Mycotoxins modify the barrier function of Caco-2 cells through differential gene expression of specific claudin isoforms: Protective effect of illite mineral clay. *Toxicology*, 353–354: 21–33.

³Akbari, P., et al. 2017. The intestinal barrier as an emerging target in the toxicological assessment of mycotoxins. *Arch. Toxicol.*, 91: 1007–1029.

⁴da Silva, E.O., et al. 2018. Mycotoxins and oxidative stress: where are we? *World Mycotoxin Journal*, 11: 113–133.

⁵Mwihia, E.W., et al. 2018. Co-Occurrence and Levels of Mycotoxins in Fish Feeds in Kenya, *Toxins* 2020, 12: 627.





Emerging mycotoxins and unmasking new danger

Our LC-MS workflow solutions using triple quadrupole or high-resolution accurate mass along with sophisticated data analysis and well characterized spectral cloud-base libraries are ready to help you enable lower costs per test for multiple mycotoxins, identify emerging dangers, and meet your regional analytical performance criteria.

WE CAN help

Find out more at [thermofisher.com/mycotoxin-analysis](https://www.thermofisher.com/mycotoxin-analysis)

Emerging mycotoxins of concern

Fusarium mycotoxins	Asperillus mycotoxins	Alternaria mycotoxins	Penicillium mycotoxins
Fusaric acid Fusaproliferin Enniatins Beauvericin Moniformin Culmorin Butenolide	Sterigmatocystin Emocin	Alternariol Alternariol mono-methyl ether Tenuazonic acid	Mycophenolic acid

Increasingly, attention is being paid to these emerging mycotoxins, which are not often analyzed or regulated.¹

Masked mycotoxins, an emerging danger

Masked mycotoxin	Source	Contamination (%)	Comments
DON-3-glucoside	Maize, wheat, barley, oats, maize silage, finished feed	Up to 100%	Most studied; detected in 2005; monitored regularly in Europe
Nivalenol-3-glucoside	Wheat, barley, oats	10 to 61.8%	—
T-2-toxin-3-glucoside	Wheat, oats	—	—
HT-2-toxin-3-glucoside	Wheat, oats	—	—
ZEN-14-glucoside	—	3.2 to 42%	First detected masked mycotoxin (2002)

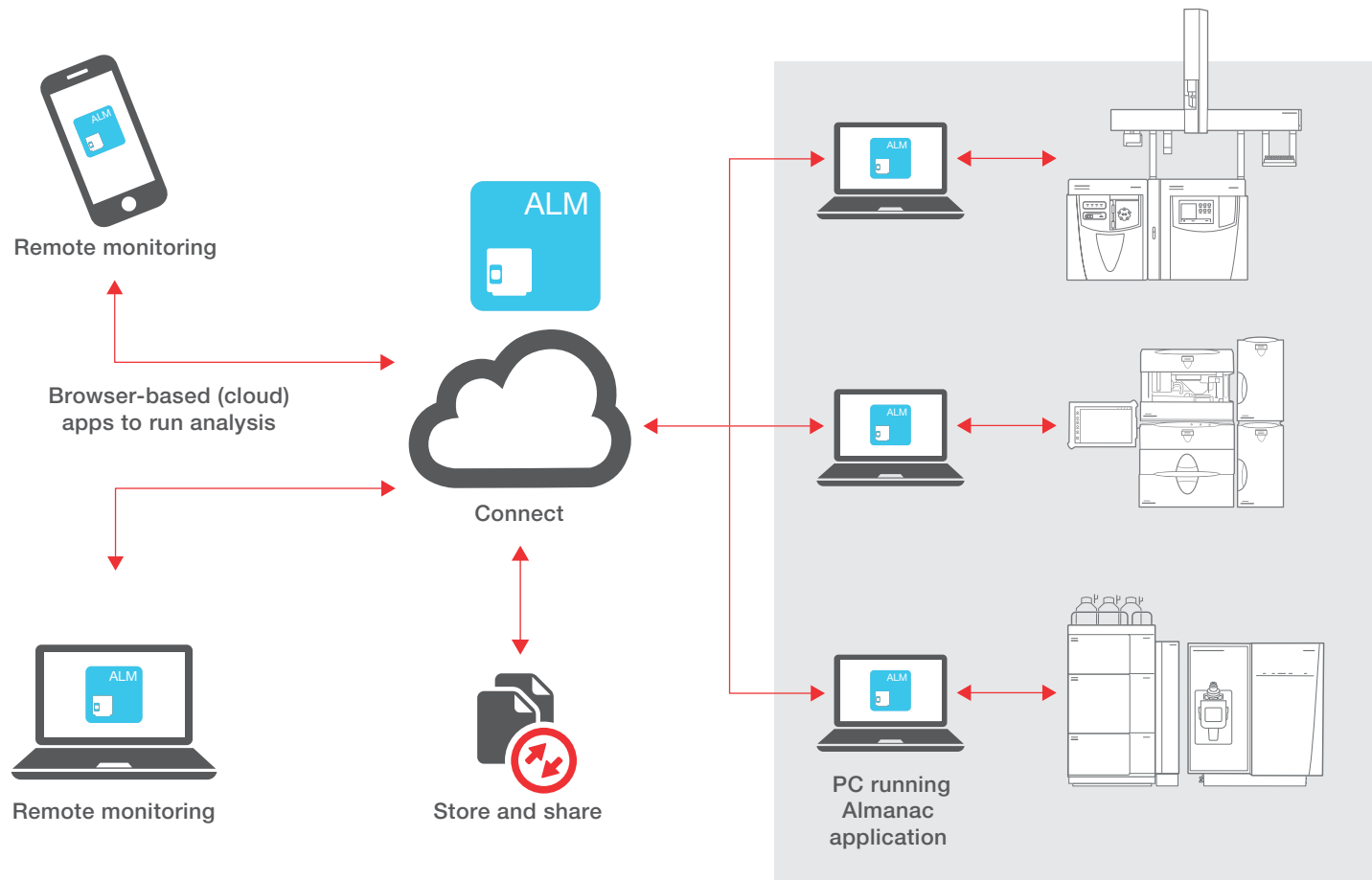
Deoxynivalenol (DON)-3-glucoside (DON-3G) is one of the more well-studied masked mycotoxins and can be present up to 100% of the level of DON in the plant. The EU and other regions are working on established testing for these select masked mycotoxins.¹

¹Gruber-Doring et al 2017. Emerging Mycotoxins: Beyond Traditionally Determined Food Contaminants. J Agric Food Chem, 65(33):7052-7070.

Provide connected solutions to manage your data stream and day-to-day operations

Every food testing lab can benefit from walkaway efficiencies, and the ability to manage operations from the cloud. Our digital capabilities increasingly enable this evolution—through access to secure, cloud-based data storage, scientific analysis applications, and peer collaboration tools. Asset management tools allow remote time-scheduling on your instruments via your mobile device and monitoring analytical equipment to ensure it's in working order, with real-time telemetry data monitoring and troubleshooting from our service team.

Monitor. Store. Share. Change the way science is done.

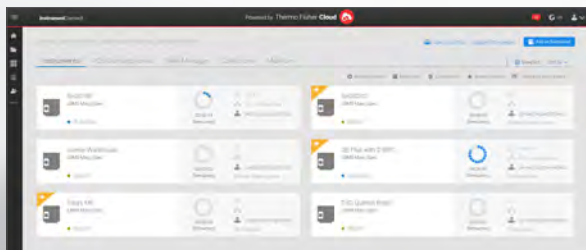


Push. Share. Log. Simplify your instrument management.

Stay connected to your science—let Thermo Scientific™ Almanac™ web based application simplify your instrument management from a single dashboard. Review and share instrument history, stay updated on current acquisition status, and prepare for what's next all from one accessible productivity tool.

Almanac application features

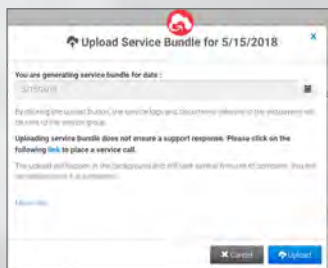
Lab view



View instrument status



Push to service



Log and push files to service for faster resolution



Software that simplifies learning and reporting

Time is money for every laboratory, and every tool that can reduce your overhead or administrative burden helps to optimize your cost efficiency. Our software tools can help you keep up with training, instrument management and regulatory compliance. So you can focus on testing productivity and meeting your goals.

Reduce operator learning with enterprise software

Use Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) software to control your entire chromatography lab. This system enables security access and controls to comply with 21 CFR Part 11 and other similar regulatory requirements, and is fully scalable from a single workstation to an enterprise-wide installation, providing control of more than 350 modules from Thermo Fisher Scientific and other vendors, including support for quantitative mass spectrometry workflows for all chromatography separation techniques and MS variants, all using the same intuitive user interface.

Simplify regulatory reporting

The Thermo Scientific™ SampleManager LIMS™ software for food and beverage laboratories software is pre-configured to manage Hazard Analysis and Critical Control Points (HACCP), and enable compliance with ISO 22000 and ISO 17025 standards. Methods for typical tests in food chemistry and microbiology are set up in the Laboratory Execution System (LES) to drive.

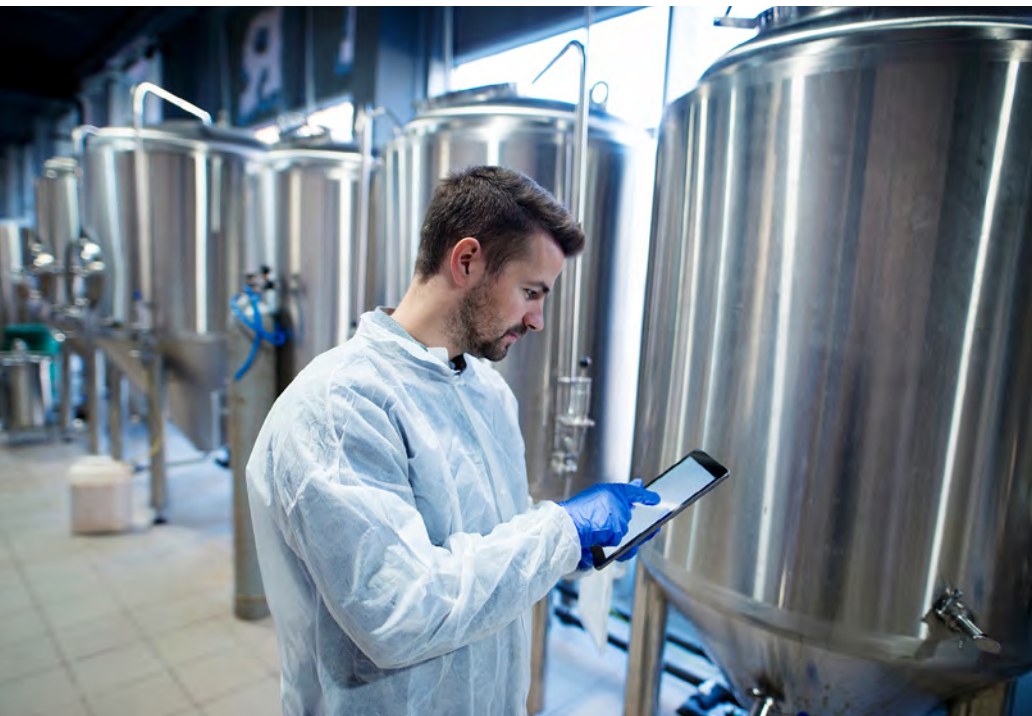
WE CAN help

Accurately analyze
samples faster and with
fewer interruptions

Providing reportable results in a timely manner requires access to a truly connected method setup and data processing ecosystem. Regardless of your application, our setup and data analysis solutions can streamline screening, quantitation and unknown identification using a powerful suite of tools.

Access the AppsLab Library: Jump-start your method development

Method setups just got quicker and easier. Thermo Scientific™ AppsLab Library of Analytical Applications is a searchable online, analytical method repository where you can find environmental applications with detailed method information, chromatograms and related compound information. Do a quick search to find what you need, then move forward with speed and confidence.



Download methods or one-click eWorkflows, created and tested by Thermo Fisher Scientific application scientists, to speed your environmental analysis. All the information needed to run, process and report the analysis is available in ready-to-use methods.

Focus on results, not instrument operation

Enable easy rotation of your lab technicians with integrated mass spectrometry workflow-driven software solutions that streamline everyday tasks in smarter ways—from instrument optimization and troubleshooting to routine method development and results reporting.

Easy, intuitive instrument control*

- SmartTune simplifies tuning for Thermo Scientific ISQ™ GC-MS and TSQ™ LC-MS and GC-MS instruments—recommending corrective action if a problem is detected
- Ready-to-use templates reduce method development time
- AutoSRM serves as your MS method development expert, integrated into your system
- Timed-SRM automates method optimization when adding more compounds to a single run without compromising sensitivity
- Retention time alignment (RTA) helps maintain retention times during routine operation
- For heavy metal analysis, an intelligent dilution feature registers analytes outside of the defined quality control requirements, then course-corrects and re-runs automatically

** All features not available on all MS instruments.*



WE CAN help

Sample preparation and separation

Be more productive, reduce errors, and get better results with lab essentials, innovative sample preparation and automation including: Dispersive SPE (QuEChERS), Accelerated Solvent Extraction, and Automated Solid Phase Extraction (SPE).

These Thermo Scientific™ columns and cartridges are recommended for these analytical applications:

PESTICIDES

LC:
 Accucore™ aQ
 Hypersil™ GOLD™
 Acclaim™ PA2

GC:
 TraceGOLD™ TG-5SIL
 LinerGOLD™ GC Liners

IC:
 Dionex™ IonPac™ AS19-4µm

MYCOTOXINS

LC:
 Accucore aQ
 Hypersil GOLD aQ
 Acclaim C18

OTHER FOOD CONTAMINANTS

LC:
 Hypercarb™
 Hypersil GOLD
 Acclaim PA2

GC:
 TraceGOLD TG-5SIL MS
 TraceGOLD TG-WaxMS
 TraceGOLD TG-Dioxin
 TraceGOLD TG-PAH
 TRACE™ TR-PCB 8MS
 LinerGOLD single taper

IC:
 Dionex IonPac anion and cation
 Dionex CarboPac

Additional accessories for analytical testing:

VIALS AND CAPS

Convenience kit:
 2 mL Vial and caps
 300 µL Polypropylene vial and PTFE/Silicone Pre-slit cap
 2 mL SureStop™ glass screw thread vials (clear and amber) + AVCS™ caps
 2 mL Crimp top vials + (magnetic) cap
 2 mL Polypropylene vial (polar pesticides)
 20 mL Headspace vials + (magnetic) caps

VET DRUGS

LC:
 Accucore VDX

FOOD QUALITY / LABELING / FRAUD / INTEGRITY

LC:
 HyperSep Retain cartridge
 Acclaim columns
 Accucore columns
 HyperREZ™

GC:
 TraceGOLD TG-5SIL MS
 TraceGOLD TG-1MS
 LinerGOLD™ single taper

IC:
 Dionex IonPac anion and cation
 Dionex CarboPac column

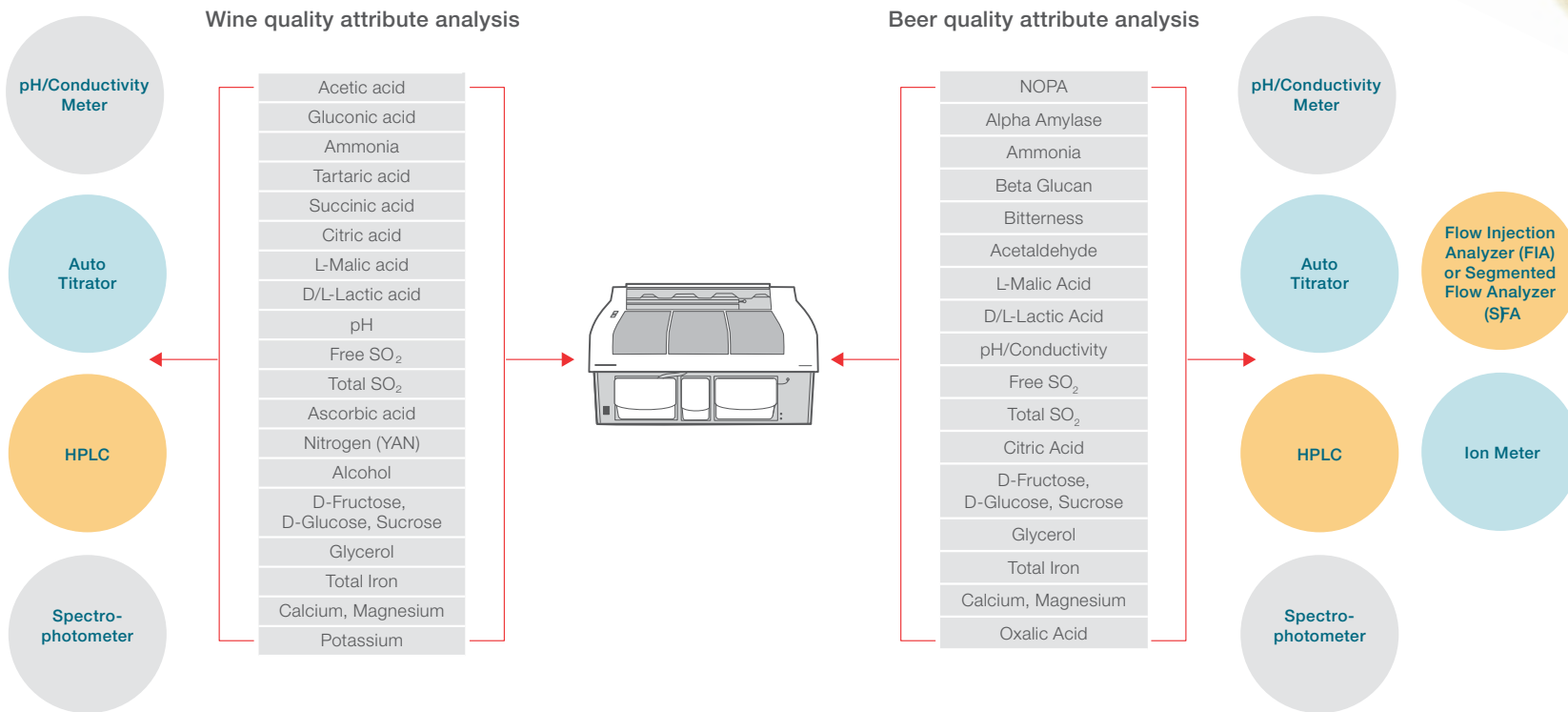


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One system; multiple quality attributes

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- Technology funding
- Workflow development
- Information management

Pre-Analysis

- Sample receiving
- Sample storage and handling
- Service and support

Analysis

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- Sample treatment, extraction and preparation
- Sample analysis
- Service and support

Post-Analysis

- Information management
- Data analysis
- Quality control and compliance
- Sample storage
- Service and support

Managed Growth

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- Instrument and software upgrades
- Continued training and learning

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