



Technology Spotlight: Lab of the Future 2025

September 25, 2025 8AM PDT | 11AM EDT | 4PM BST

Join us for an insightful webinar exploring the Lab of the Future, where emerging technologies like AI, automation and smart lab environments are revolutionizing scientific research. Discover how innovations in lab informatics, robotics and real-time data integration are driving enhanced research efficiency, fostering collaboration and ensuring data integrity. This event is designed for scientists, lab managers and technology leaders eager to learn about the next generation of research spaces and how to harness these advancements for breakthrough discoveries.

Attend this webinar to:

- See how AI and automation boost lab efficiency
- Understand smarter data management with lab informatics
- Discover robotics' role in accelerating research
- Learn the impact of real-time data integration
- Explore building future-ready smart labs

TALK 1

Multi-Agent AI Systems: From Workflow Automation to Collaborative Intelligence

Presented by Dr. Dagnachew Birru & Visshal Vaddina, Quantiphi



This presentation explores the cutting-edge development of multi-agent AI systems that can autonomously collaborate to solve complex tasks. We'll examine the foundational components required for building such systems, and how to accelerate, automate and scale these components to optimize research efficiency. The session aims to cover practical approaches to building multi-agent workflows, evaluating them end to end at multiple levels, and share thoughts on best practices like architectural patterns, continuous monitoring and improvement of workflows, and finally discuss optimization strategies that include agentic-routing and small model reasoning.

Key Learning Objectives:

- Explore fundamentals of multi-agent workflows and practical approaches to build and scale
- Understand architectural design patterns for multi-agent collaboration and their trade-offs
- Learn methodologies for end-to-end evaluation of complex agentic workflows
- Explore best-practices and optimization strategies for deploying efficient multi-agent solutions at scale

TALK 2

From Complexity to Clarity: Intelligent SPR to accelerate molecular insights

Presented by Robyn Stoller, Cytiva



Explore how AI-based machine learning analysis and information-rich techniques like Surface plasmon resonance (SPR) empower molecular interactions studies.

Addressing common challenges such as complex data interpretation, assay design bottlenecks, and limited sample availability, and how these advances enable more accessible, transparent and efficient research.

Watch this webinar to learn more about:

- High-sensitivity experimental technique to translate analysis molecular interaction in real-time
- How machine-learning- driven analysis tools enhance data interpretation
- How to minimize assay development of kinetic and affinity analysis of biomolecular interaction

TALK 3

Speed Meets Certainty: Intelligent Testing for Contaminants at Volume

Presented by Dr. Nick Birse, Queen's University Belfast



Ensuring food safety at scale demands both speed and certainty—especially when testing for contaminants like mycotoxins in massive grain shipments. In this webinar, Dr. Nick Birse shares how Queen's University Belfast uses Agilent's 6495D triple quadrupole LC/MS system and the **Intelligent Reflex** feature to meet this challenge. By combining rapid screening with automated, data-dependent reinjection, they streamline workflows, reduce solvent use, and accelerate turnaround times without compromising accuracy. This intelligent automation allows overnight unattended analysis and frees analysts for higher-value tasks. The work at Queen's University, which forms part of the Food Fortress initiative, not only supports public health and the agri-food sector in Northern Ireland but also contributes to a broader understanding of mycotoxin risks. The insights gained are helping shift food safety from reactive to proactive. This session highlights how intelligent instrumentation can transform food testing labs into faster, more efficient, and more reliable operations.

Key Takeaways:

- Learn how to streamline high-volume food safety testing using a tiered screening approach that balances speed, accuracy, and resource efficiency.
- Understand the role of intelligent automation in reducing manual review and enabling overnight, unattended analysis in food testing labs.
- Gain insights into large-scale mycotoxin monitoring and how data from routine testing can inform proactive food safety strategies

TALK 4

From Idea to Bench: Empowering Chemists with Digital Retrosynthesis

Presented by Dr. Emma Gardener, Merck KGaA Darmstadt Germany



Discover how digital retrosynthesis is reshaping modern laboratories. This session explores how AI-supported synthesis planning enables chemists to rapidly design efficient, cost-effective, and sustainable synthetic routes. Attendees will learn how digital tools can reduce manual effort, accelerate research timelines, and support greener chemistry by optimizing reaction pathways and resource use. See real-world examples of how automated route design overcomes common bottlenecks, fosters creativity, and empowers researchers to focus on breakthrough science. Whether you're a bench chemist or a lab manager, this webinar will equip you with practical strategies to future-proof your research and maximize the impact of your lab in the era of smart, connected science.

Key Takeaways:

- Understand how digital retrosynthesis accelerates and improves synthetic route design for novel and known molecules.
- Learn best practices for integrating AI-supported synthesis planning into daily research workflows to boost productivity and creativity.
- Explore strategies for greener chemistry, including how digital tools help minimize waste, reduce hazardous reagents and improve atom economy.
- Identify how automation and informatics can free up scientists' time for high-value, innovative research.