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### **Life Sciences Assay Developments and Sustainability Progress**

*The October 2023 issue of SLAS Technology looks at new developments in reducing laboratory automation waste and other technology-advancing research.*

**Oak Brook, IL** – [Volume 28, Issue 5](#) of *SLAS Technology*, includes two review articles, six original research articles and one short communication on assay development with machine learning, novel laboratory automation systems and other areas of life sciences research.

Reviews

- [Improving Protein Therapeutic Development Through Cloud-Based Data Integration](#)  
Key highlights from this review suggest automated cloud-based data capture and processing are crucial for the future of pharmaceutical digitalization, applications of Lab Data Capture and several other highlights.
- [Sample-to-Answer Sensing Technologies for Nucleic Acid Preparation and Detection in the Field](#)  
This review article summarizes recent advances in portable sample preparation technologies and detection methods, highlighting their potential to enable sample-to-answer sensing systems for disease detection and analysis in resource-limited settings, agriculture, environmental monitoring and defense against biological threats.

Original Research

- [A Rapid, High-Throughput, Viral Infectivity Assay Using Automated Brightfield Microscopy with Machine Learning](#)  
The authors present an automated viral infectivity assay (AVIATM) that utilizes convolutional neural networks (CNNs) and high-throughput brightfield microscopy to rapidly quantify infection phenotypes of various viruses, offering a faster and more precise alternative to traditional infectivity assays for virus characterization and potential identification.
- [The Tecan SiLA2 SDK: A Royalty-Free, Open-Source Framework to Develop SiLA2 Servers and Clients](#)  
This research article introduces Tecan's open-source framework, SiLA2 SDK, that simplifies the integration of laboratory devices with proprietary interfaces into automation platforms, demonstrating its applicability through case studies of integrating various devices using the SiLA2 standard.

- [A Sticky-End Probe Biosensor for Homogeneous Detection of Transcription Factor Binding Activity](#)  
Studied in this article is the design and optimization of a sticky-end probe biosensor for the homogeneous detection of transcription factor-DNA binding activity, aiming to simplify the process of therapeutic screening and disease diagnostics.
- [Screening Station, a Novel Laboratory Automation System for Physiologically Relevant Cell-Based Assays](#)  
This report uses the Screening Station to automate complex processes involved in cell-based assays using human-induced pluripotent stem cell (iPSC)-derived cells, enabling long-term culture, real-time imaging and immunofluorescence assays, with the potential to enhance reproducibility, save time and support remote experimentation.
- [Development And Validation of an Automated Assay for Anti-Drug Antibodies in Rat Serum](#)  
The authors present the development of automated screening and confirmatory bridging ELISAs for detecting rat antibodies against a therapeutic human monoclonal antibody (DH1042) for SARS-CoV-2, demonstrating their suitability for assessing the immunogenicity of such antibodies in preclinical testing and suggesting their potential applicability to other biologics.
- [Capillary Electrophoresis Methods for Determining the IVT mRNA Critical Quality Attributes of Size and Purity](#)  
This article discusses the importance of quality control for in vitro transcribed (IVT) mRNA, presenting methods for assessing IVT mRNA purity and poly(A) tail length using capillary gel electrophoresis.

#### Short Communication

- [Greening Automation: Wash and Re-Use of Disposable 384-Well Liquid Handling Tips to Enable Sustainable High-Throughput Vaccine Development](#)  
In an effort to make progress towards sustainability, the authors create a sustainable approach to laboratory automation by developing workflows for washing and reusing 384-well liquid handling tips in ELISAs, resulting in a significant reduction in plastic and cardboard waste without introducing new chemicals into the waste stream.

Access to the October 2023 issue of *SLAS Technology* is available at [https://slas-technology.org/issue/S2472-6303\(23\)X0006-5](https://slas-technology.org/issue/S2472-6303(23)X0006-5)

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*SLAS Technology* reveals how scientists adapt technological advancements for life sciences exploration and experimentation in biomedical research and development. The journal emphasizes scientific and technical advances that enable and improve:

- Life sciences research and development
- Drug delivery
- Diagnostics
- Biomedical and molecular imaging

- Personalized and precision medicine

SLAS (Society for Laboratory Automation and Screening) is an international professional society of academic, industry and government life sciences researchers and the developers and providers of laboratory automation technology. The SLAS mission is to bring together researchers in academia, industry and government to advance life sciences discovery and technology via education, knowledge exchange and global community building.

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