Reengineering FISH: How CellWriter™ Streamlines Cytogenetic Testing

Words By: Erica Phillips and Chris Treble

The BioDot CellWriter™ S is an integrated automation platform purpose-built to modernize cytogenetic workflows, with a particular focus on fluorescence in situ hybridization (FISH) and metaphase slide dropping. CellWriter™ S leverages proprietary quantitative fluid dispensing technology, functionally similar to inkjet printing but engineered for biological diagnostics. It combines a precision XYZ motion stage with a BioJet HR™ non-contact dispenser, miniaturizing and automating slide preparation to improve throughput, reduce variability, maintain analytical fidelity, enabling highly accurate and reproducible application of biological reagents.

A key innovation is multiplexing capability: CellWriter™ S can perform up to eight distinct FISH assays per slide, each targeting approximately 500–1,000 cells, significantly reducing slide consumption and simplifying downstream image analysis.

Reagent efficiency is another major benefit. Traditional FISH protocols typically require ~10 µL of fluorescent probe per assay. CellWriter™ S reduces this to 0.35 µL, achieving a ~95% reduction in probe usage. The system dispenses with nanoliter precision, ensuring uniformity and reproducibility across runs.

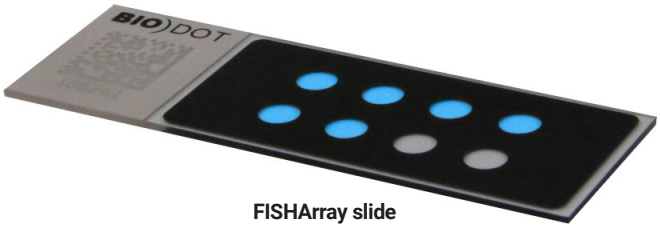
Additionally, CellWriter™ S supports pre-analytical flexibility with the ability to automatically dilute or concentrate assays prior to analysis, accommodating a wide range of matrices and specimen qualities.

CellWriter™ S Platform

Erica Phillips
Sales Director, MDx NA

Erica Phillips is the Sales Director of Molecular Diagnostics, North America at BioDot, Inc., where she leads commercial strategy and customer engagement for the company's CellWriter™ S platform. She began her career in the clinical laboratory, gaining hands-on expertise in FISH workflows and a firsthand understanding of the operational challenges cytogenetics labs face. That foundation continues to shape her approach today.

Since joining BioDot in 2022, Erica has focused on advancing the adoption of the CellWriter™ system, helping laboratories streamline metaphase slide preparation and FISH processing through automation. She works closely with lab teams across North America to improve efficiency, reduce costs, and ultimately enhance patient care through more optimized workflows. Her career path—from the bench to leadership roles at Duke University Health System and Oxford Gene Technology—reflects a commitment to bridging technical insight with strategic solutions.

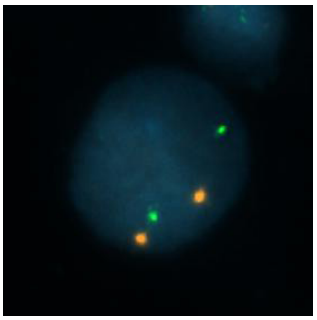


FISHArray slide

At the system level, CellWriter™ S is designed to automate both the physical and data management aspects of FISH and broader cytogenetic assays. The platform includes a built-in barcode reader for full traceability, along with an advanced software suite including proprietary data visualization, and PIMS for reagent inventory tracking.

By unifying precision fluidics, flexible sample handling, and robust data integration, CellWriter™ S delivers a scalable, cost effective solution for cytogenetics labs looking to improve efficiency, lower reagent costs, and maintain high diagnostic standards.

Empire Genomics BDot Probe Line



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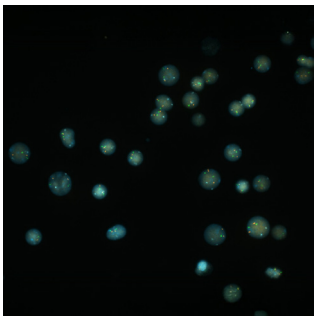

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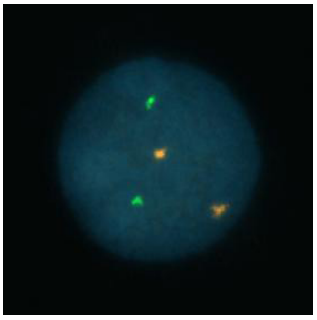

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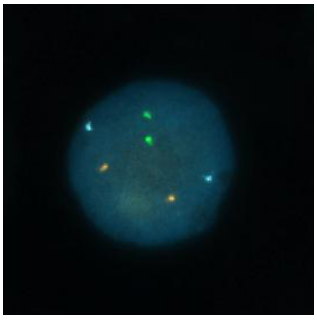

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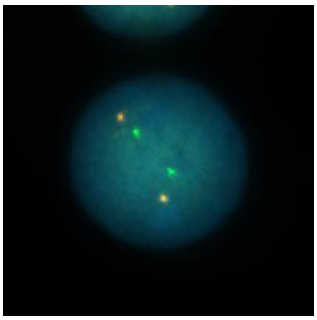

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