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Boosting Reproducibility and Workflow Efficiency in Cell-Based Assays with epMotion® 96 Flex and CellTiter-Glo®

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Introduction

Reliable assessment of cell health and reproducible cellular responses are fundamental in biomedical research, with data quality heavily influenced by the consistency of cell-based assay workflows. The Eppendorf epMotion® 96 Flex, a semi-automated 96-channel pipette, offers a convenient and contamination-free solution for handling cells and reagents within the challenging environment of a biosafety cabinet. By minimizing variability associated with manual pipetting, the epMotion® 96 Flex enhances the robustness of cell-based experiments. The use of a 96-channel pipetting head significantly increases experimental throughput, especially when processing multiple plates in parallel, reducing the time cells spend outside the incubator – a critical factor for maintaining cell health and minimizing stress-induced variability. When combined with the single-reagent, add-mix-measure Promega CellTiter-Glo® 2.0 Cell Viability Assay – a sensitive method for quantifying cellular ATP as an indicator of viability – this workflow supports highly reproducible



and reliable results in microtiter plate formats. Here we highlight the benefits of integrating semi-automated liquid handling with sensitive luminescence-based detection to optimize cell-based assay performance and data reliability.

User benefits

> **Improve reproducibility and reliability** in cell-based experiments by providing standardized pipetting and minimized user-dependent variations.

> **Increase throughput and save valuable time** by allowing you to fill a 96-well plate in a single step.

> **Add-mix-measure principle** simplifies your workflow ensuring consistent results from well to well and plate to plate.

> **Get the best out of your assay** with highly sensitive and robust detection of viable cells.

Workflow

Following initial seeding, HeLa cells were treated with increasing concentrations of Staurosporine. All pipetting steps were carried out with the epMotion® 96 Flex. The cells were maintained at 37 °C with 5 % CO_2 in a CellXpert C170i incubator. Cell viability was assessed using the CellTiter-Glo® 2.0 assay on a GloMax® Plate Reader.



Results

The half-maximal inhibitory concentration (IC50) was determined by evaluating the cellular response to increasing concentrations of Staurosporine. Data represent Luminescence-based measurement of cell viability from three independent plates (n=8 per concentration). The response demonstrates a concentration-dependent decrease in viability, with consistent results observed across all plates (intra-plate CV ≤ 10 %) with a mean IC50 of 132 nM.

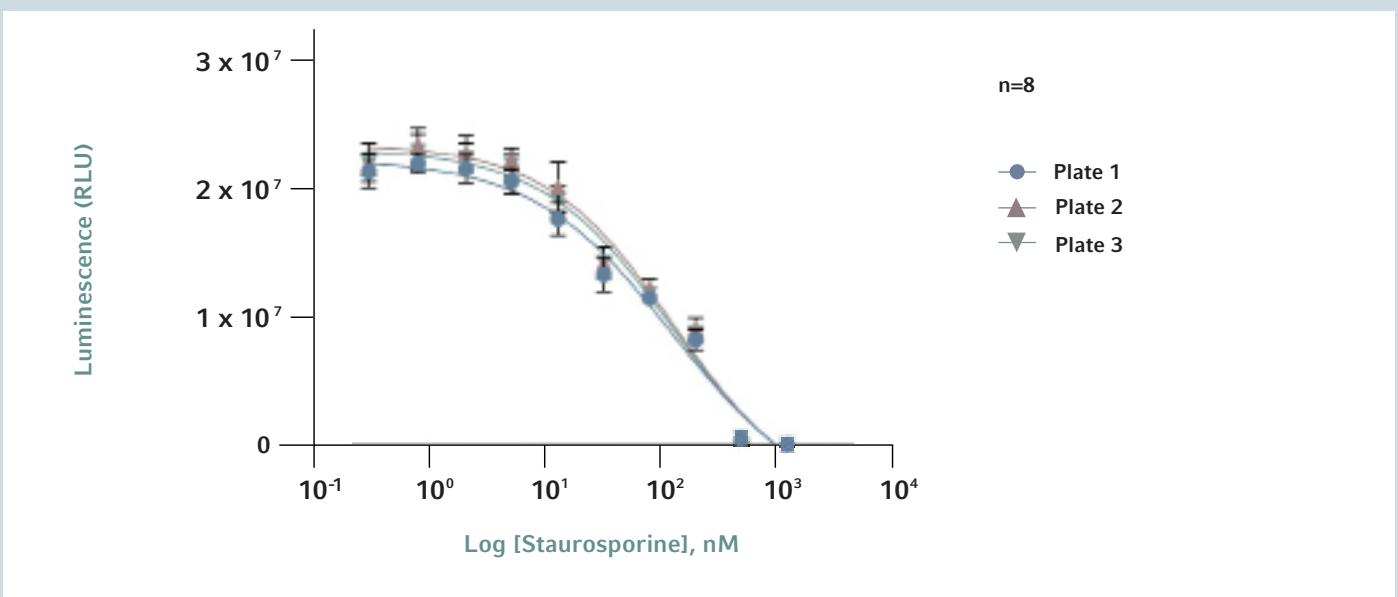

Figure 1: Dose-dependent toxic effect of staurosporine on HeLa cells. Cell seeding and assay reagent addition were performed with the epMotion® 96 Flex (n=8) on 3 independent plates.

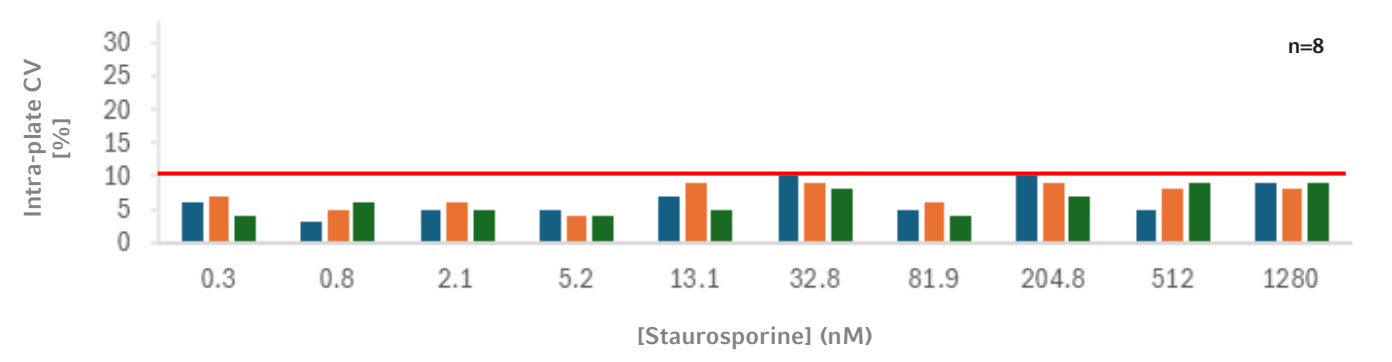

Figure 2: Intra-plate coefficient of variation (CV %) for replicate measurements of cell viability. Values ≤ 10% demonstrate high consistency and reliability of the assay across the plate.

Summary

The epMotion® 96 Flex with the CellTiter-Glo® 2.0 Cell Viability Assay streamlines cell-based workflows by reducing handling steps, maintaining cell health, and delivering reproducible IC50 determinations across multiple plates.

Together, these platforms provide a practical, scalable approach for generating consistent, high-quality viability data in screening and other cell-based applications.

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