

Identification of HDAC1 inhibitors with an automated Fluorogenic assay using the Labcyte Access Workstation with an integrated Labcyte Echo® liquid handler and Echo® Qualified Reservoir.

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Epigenetics continues to emerge as an important target class for drug discovery and cancer research. As programs scale to evaluate many new targets related to epigenetic expression, new tools and techniques are required to enable efficient and reproducible high-throughput epigenetic screening. Echo liquid handlers can transfer compounds, samples, and reagents in sub-microliter volumes to high density assay formats using only acoustic energy - no contact or tips are required. This eliminates tip costs and reduces the risk of reagent carryover. Employment of our newly-released Echo® qualified reservoir enables rapid delivery of bulk reagents to an assay plate using the precision of acoustic energy. Additionally, use of the BMG PHERAstar FS multi-mode plate reader, with the highest sensitivity and lowest read time of assays in high density plate formats, is a perfect complement to enable an unparalleled solution for cost-effective, high-throughput epigenetic screening. The Labcyte Access Workstation greatly facilitates assay execution by integrating the Echo® and the Pherastar , as well as a Combi bulk dispenser, a centrifuge, and a plate peeler and sealer.

Using Enzo Life Science's Fluor de Lys technology, we developed an HDAC1 deacetylase assay that was miniaturized and easily adapted to automation to produce high data quality. The Fluor de Lys assay is typically performed at a 100 µL volume in 96-well format. However, with the nanoliter dispense increments of the Echo® liquid handler, including employment of the Echo® qualified reservoir, assay volumes can be reduced significantly while maintaining data quality. In this study we were able to develop a robust 384 well deacetylase assay in a 3 µL final volume that accurately and reproducibly identified known HDAC1 inhibitors.