Evaluation of combination treatment efficacy utilizing the Labcyte Echo® liquid handler and Echo® Combination Screen Software with reduced cost, increased throughput and flexibility in a PC3 viability assay

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Class I PI3Ks have been extensively characterized with respect to their roles in cell proliferation and tumorigenesis, and therefore serve as desirable targets for oncogenic drug development. Class I PI3K isoform-specific inhibitors provide elucidation of the individual isoform functionality, and on the dependence of particular cell types upon them. In this study, we evaluate the impact of PI3K isoform-selective inhibitors, as single-agents and in combination, on the viability of PC3 prostate cancer cells.

Utilizing the Labcyte Echo 555® liquid handler and the recently released ECS Echo combination screen software (ECS), we have demonstrated a highly efficient, low-cost assay to evaluate the impact of PI3K inhibitors on PC3 cell line viability. The Echo 555 series liquid handler system uses direct dilution to dispense nanoliter volumes of compounds at high concentrations to assess dose dependent effects on cell viability as single agents and in combination treatment (CT). Additionally, the employment of our Echo Combination Screen Software (ECS) compliments CT protocols by providing a graphical interface to visually combine dose-response curves, controls, and single concentration transfers into one combination screening protocol.

The results demonstrate robust plate statistics and validated potency estimates in a high density assay. In addition, the utilization of ECS to easily deliver combinations of inhibitors to the assay plate greatly facilitates the execution of a complex assay and produces compelling data. The Labcyte Echo® liquid handlers and ECS software enable highly efficient, low cost, targeted identification of biological drug treatment rationale in a fast and robust manner.