

Cell Cycle Distribution

Background and Objectives

Cytokines, hormones, growth factors, and xenobiotics can alter the cell cycle distribution of target cells. Uncontrolled cell cycle progression can result in hyperplasia and cancer, cell cycle arrest in apoptosis and cell death. Many drugs have an effect on the cell cycle distribution of cells and thus have the potential to limit or even prevent the use of said drug as therapeutic. In contrast, drugs developed for oncology might have an advantage over competing drugs, if they stop cell cycle progression by causing a cell cycle arrest. Pharmacelsus' flow-cytometry based cell cycle module is able to determine effects of drug candidates on cell cycle distribution as well as ploidy. Additionally, information about apoptotic potential and other cellular responses can be included.

Experimental Design

Pharmacelsus measures cell cycle distribution fluorochromatically in a customizable cell culture system or in a reference cell line (human monocytic leukemia). Several time points can be determined for kinetic analyses, different drug concentrations can be tested for determination of dose-response relationships. A multiplexing with other parameter such as membrane integrity is possible. Pharmacelsus uses a state-of-the-art two-laser, five-color Cytomics FC500 MPL flow cytometer (11 CFR part 11 compliant).



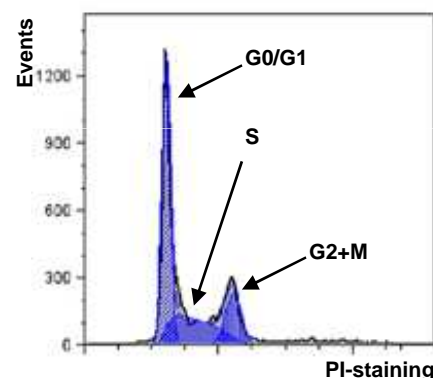
Cytomics FC500 MPL (Beckman Coulter)

Data Acquisition and Analysis

At least 25,000 cells will be collected per assay or time point. Cells will be acquired without exclusion of outliers to collect as much information as possible. If desired, varying gating strategies can be applied, even post data acquisition. Inclusion of marker antibodies is possible. Data will be presented according to international standards as % cells in Go/G1-, S-, and G2/M-phase. Additional information such as size and granularity can be provided as well, multiplexing and determination of S-phase content are optional.

Quality Benchmarks and Controls

Whenever appropriate, positive and/or negative control compounds will be included in each setup. The performance of the flow cytometer will be monitored by measuring predetermined parameters using standardized beads.



Flow cytometric determination of cell cycle distribution

Supplemental Testing

Aside from determining cell cycle distributions, other parameters such as apoptosis, necrosis, membrane integrity, and reactive oxygen species (ROS) can be measured by means of flow cytometry.

Please don't hesitate to contact us for a customized quotation

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