

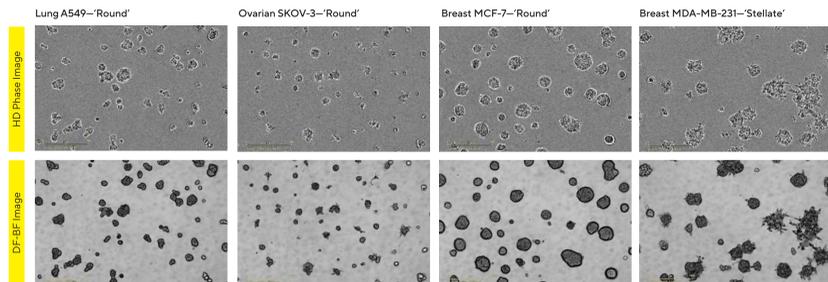
Development and Optimization of Matrigel-Based Multi-Spheroid 3D Tumor Assays Using Real-Time Live-Cell Analysis

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Summary and Impact

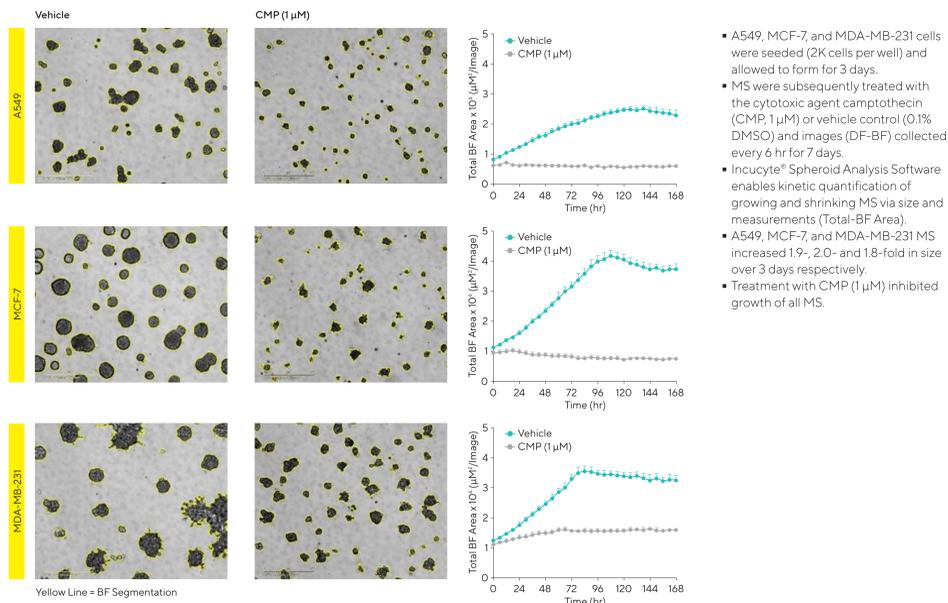
- The tumor-associated extracellular matrix (ECM) micro-environment provides critical biochemical cues as well as an essential structural scaffold for solid tumors to survive and grow.
- Here we describe a robust 3D ECM-based technique for culturing multiple tumor spheroids formed of lung, ovarian or breast cancer cell lines in a 96-well format.
- Incucyte® depth of focus (DF) brightfield image acquisition tool enables the ability to monitor and quantify changes in spheroid size and morphology (brightfield) as well as viability (fluorescence) using real-time live-cell analysis.
- The use of Incucyte® Cell Health reagents such as Incucyte® Annexin V Dye to label apoptotic cells elucidates mechanism of action of compound treatments.
- Furthermore, this approach should facilitate more translational investigation of primary- and patient-derived organoid tumors.

Novel DF-Brightfield Image Capture

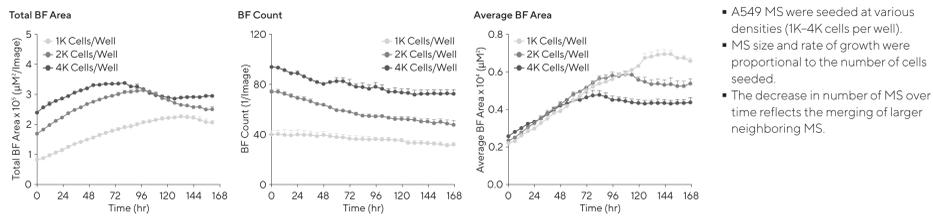


- High-definition (HD) phase and DF-Brightfield (BF) images of multi-spheroids (MS) formed from a range of tumor cell lines (5 days post seeding) on a Matrigel® base.
- Incucyte®'s proprietary image acquisition technique, DF-BF for 3D cultures, generates high contrast, extended depth of focus images.
- 3 days post seeding, A549, SKOV-3 and MCF-7 cells formed round aggregates, while MDA-MB-231 MS exhibited stellate branching distinctive of an invasive morphology.

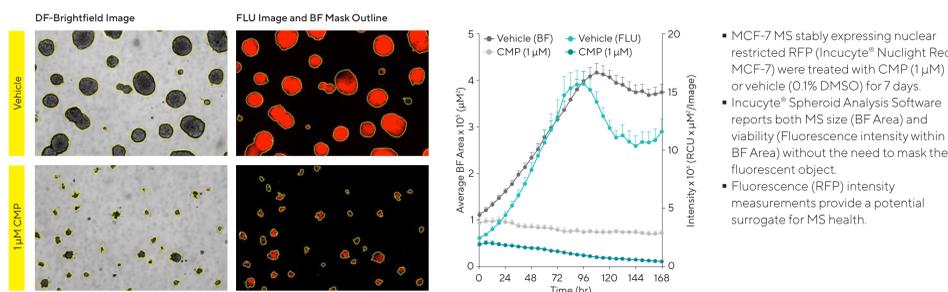
DF-Brightfield Enables Label-Free Quantification



Cell Number Dependent Multi-Spheroid Size



FP Expression as an Alternative Measure for Cell Viability



Incucyte® Live-Cell Imaging and Analysis: Methodology



Incucyte® Live-Cell Analysis System

A fully automated phase contrast and fluorescence imager that resides within a standard cell incubator for optimal cell viability. Designed to scan plates and flasks repeatedly over time.

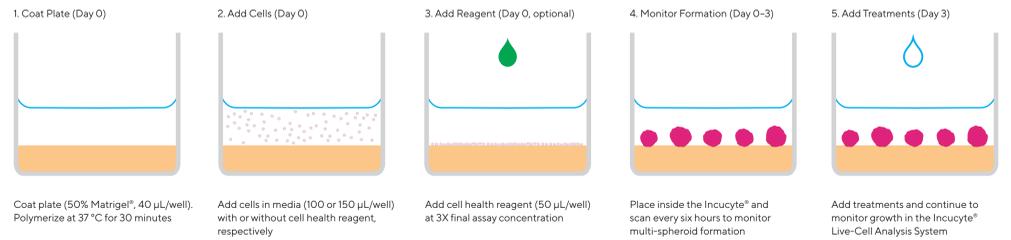
Incucyte® Software

Fast, flexible, and powerful control hub for continuous live-cell analysis comprising image acquisition, processing, and data visualization.

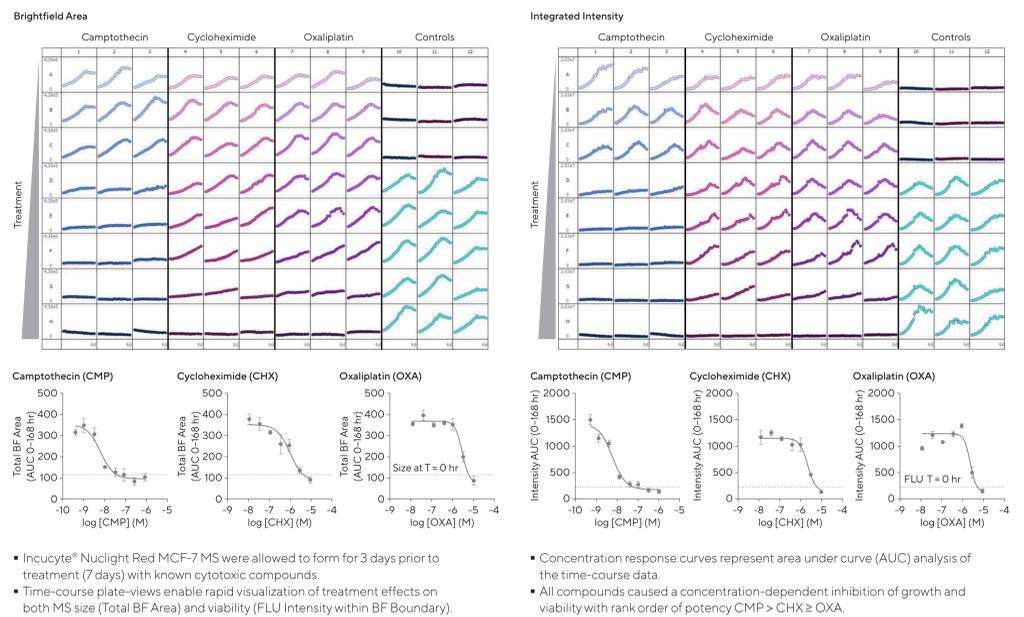
Incucyte® Reagents and Consumables

A suite of non-perturbing cell labeling and reporter reagents. Includes nuclear-targeted GFP and RFPs for cell counting plus no-wash cell health reagents for apoptosis and cytotoxicity.

Quick Guide



Quantitative Pharmacology Using Label-Free and Fluorescent Readouts



Label-Free and Fluorescence as a Measure of MS Cytotoxicity

