

Quantifying cell subsets and heterogeneity in living cultures using real-time live-cell analysis

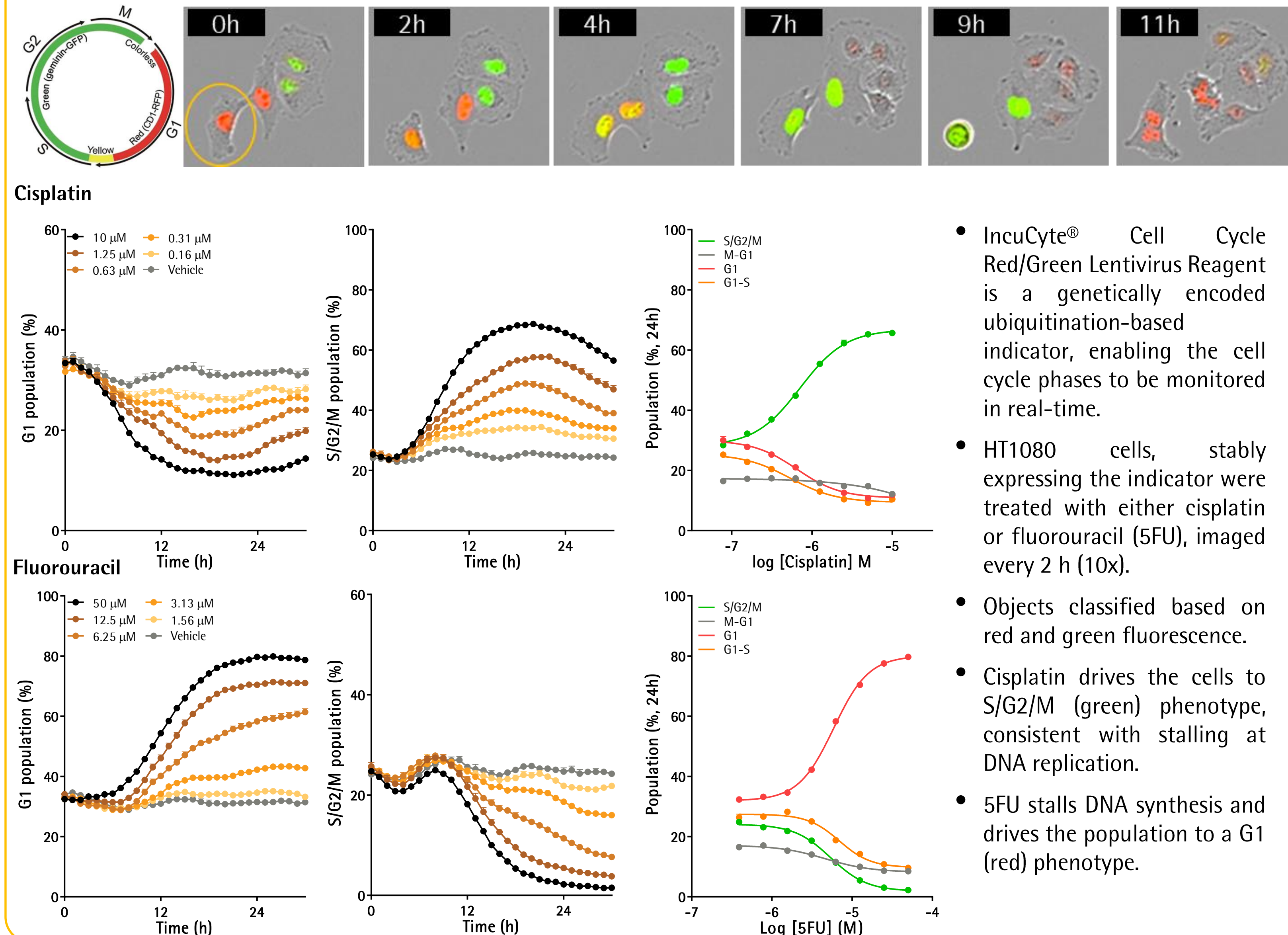
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Summary & Impact

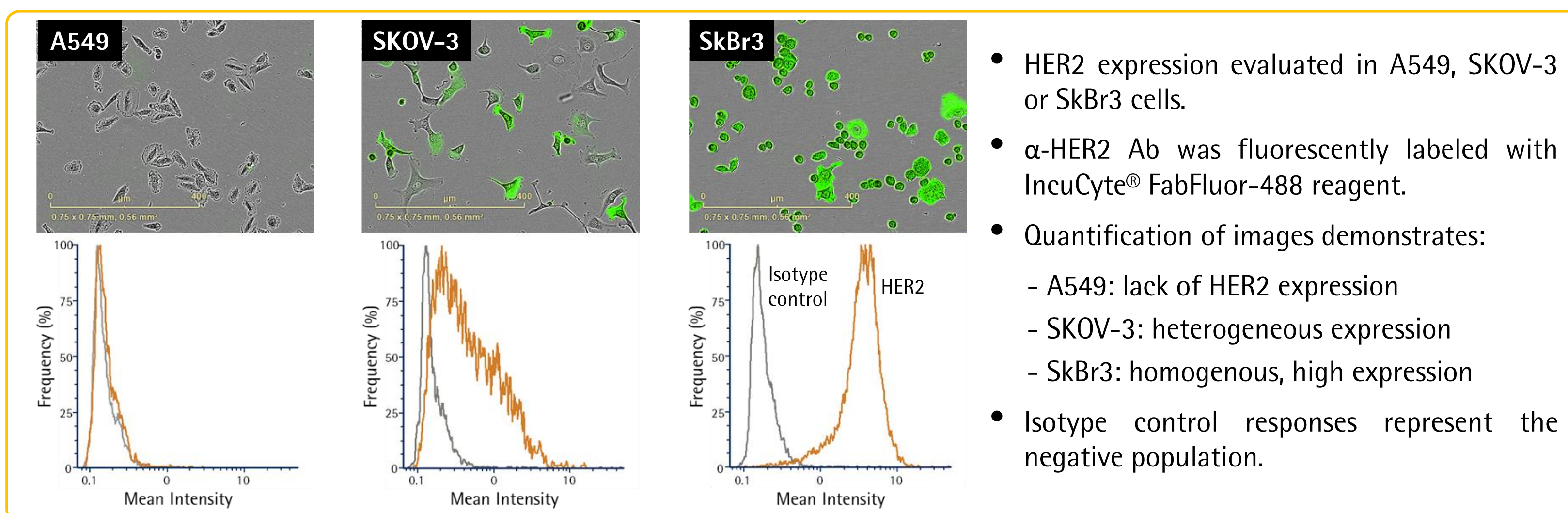
- Heterogeneity exists in all cellular populations, ranging from the cell types present to differences at the genetic level or stage of cell cycle. This heterogeneity plays an important role in how populations react in response to therapeutics and biological stimuli.
- To date IncuCyte® analysis has been solely based on population-averaged measures whereby object (cell) data is consolidated into an aggregate metric.
- However, effects on subpopulations can sometimes be masked by larger numbers of 'non-responsive' cells or similar sized populations may produce opposite responses that result in a net zero result.
- Analysis at the cell-by-cell level promises valuable and additional biological insight beyond which whole population measures may deliver.
- The IncuCyte® Cell-by-Cell Analysis software module and associated reagents provide automated image capture and analysis in real time in order to provide an integrated solution for monitoring at the cell-by-cell level and increase biological insight.
- Here, we present data validating the IncuCyte® Cell-by-Cell Analysis segmentation & classification with various examples of biological activity to show parameter changes over time. Importantly, these changes can be related to function.

Analysis of cell cycle using live-cell analysis

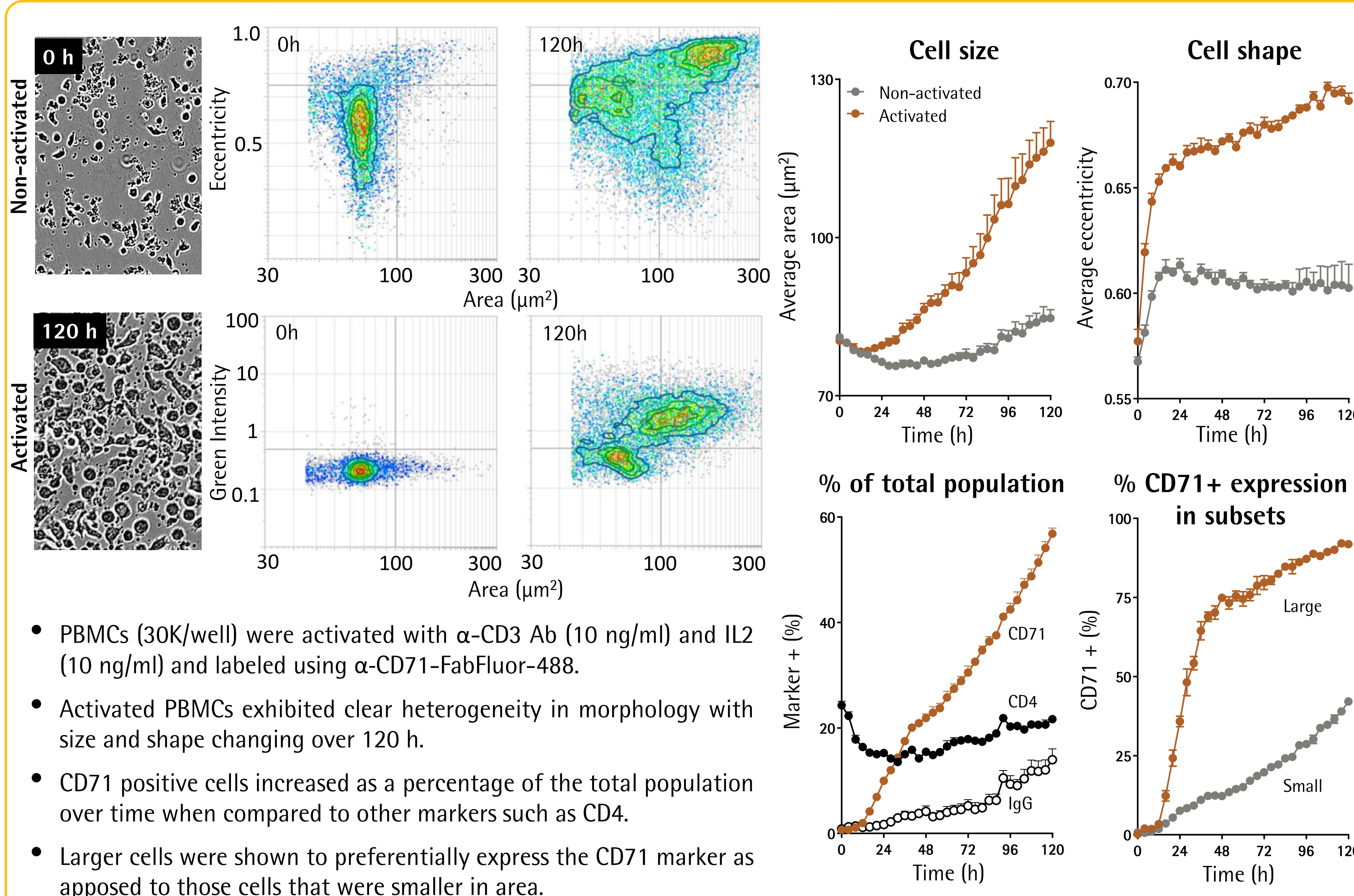
Visualize phases of cell cycle over time



Phenotyping of HER2 expression, to show heterogeneity



Monitoring PBMC activation: morphology & protein expression

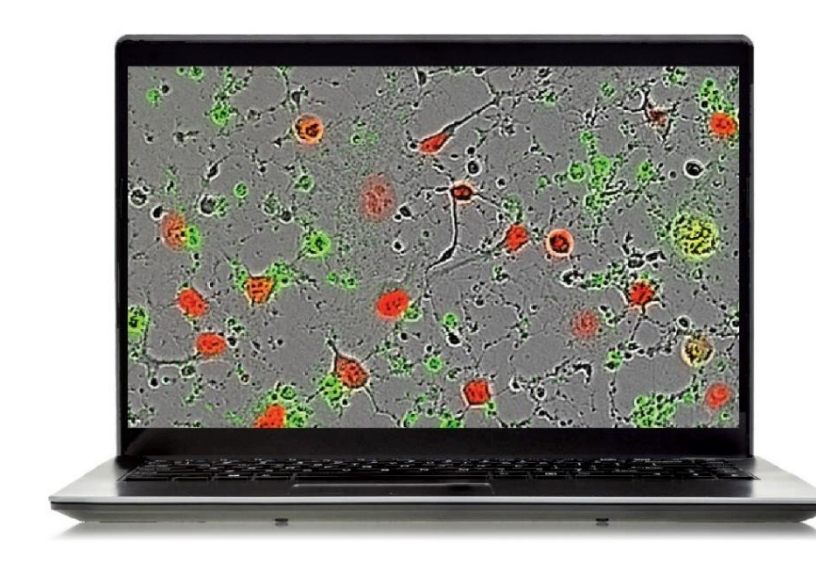


IncuCyte® System for Continuous Live-cell Analysis: Methodology



IncuCyte® Live-Cell Analysis System

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



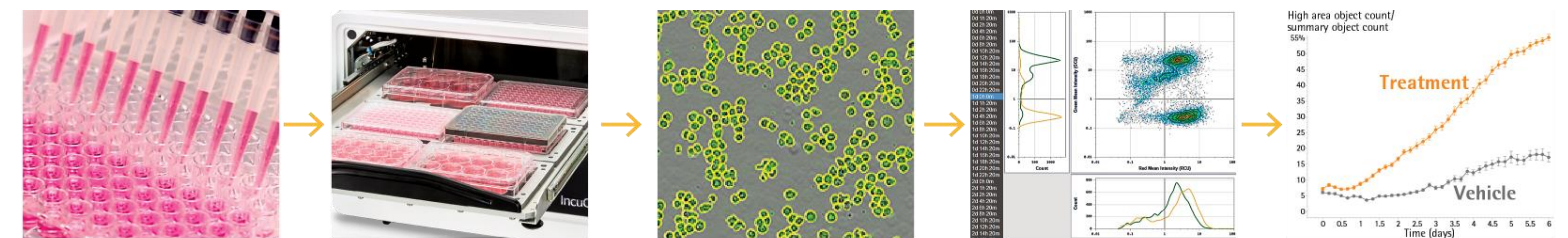
IncuCyte® Software

Fast, flexible and powerful control hub for continuous live-cell analysis comprising image acquisition, processing and data visualization. **NEW: IncuCyte® Cell-by-Cell Analysis Software Module**



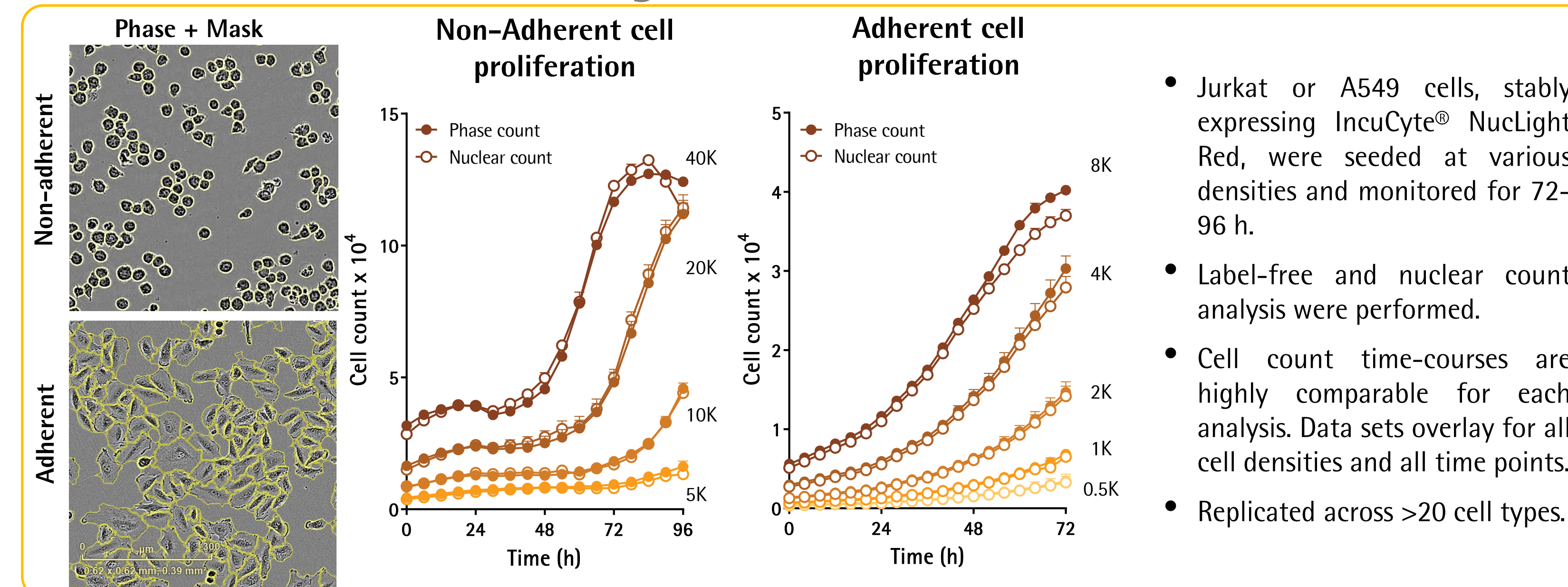
IncuCyte® Reagents and Consumables

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.

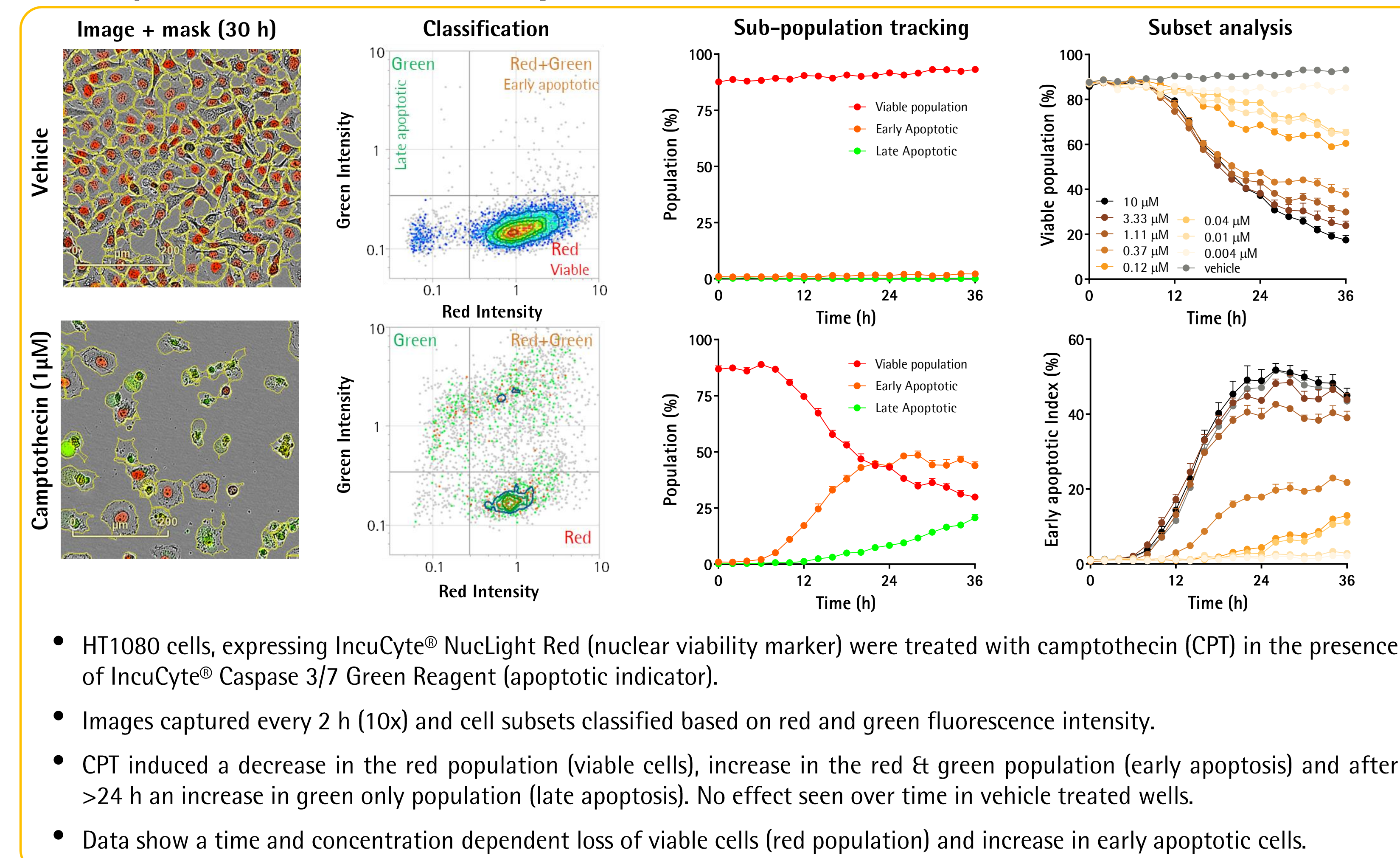


- Prepare assay plate**
Leverage propriety non-perturbing reagents and protocols. Enable multiplexed analysis in living cells.
- Acquire images**
Maintain the field of view while keeping cells stationary during imaging, leveraging IncuCyte's mobile optical train.
- Identify objects**
Identify individual cells in HD phase for label-free quantification of the total cell population.
- Measure and classify**
Group cells into subsets using size, shape or fluorescence intensity, and link subset phenotype to function or health.
- Visualize data**
Verify and graph changes in subsets over time.

Label-free, accurate cell segmentation



Analysis of cell health: Population identification



Specific, non-perturbing fluorescent labeling

