

# Leica MM Cell Cycle powered by MetaMorph®

## Analysis Software Drop-in for Leica MM AF

- Quantitation of cell cycle stages
- Adaptive Background Correction™ for improved segmentation
- Field and Cell-by-Cell data logging

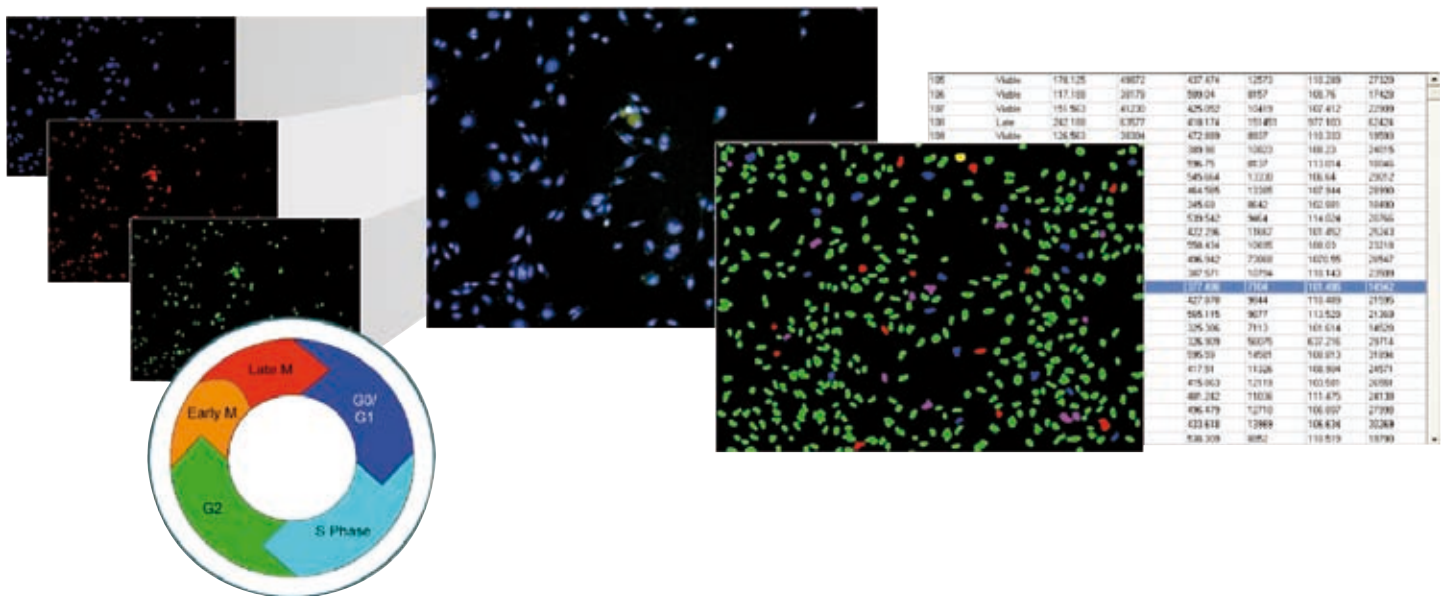
Cells have multiple checkpoints that can impede progression past the stages of G0/G1, G2 or the midpoint of M during the cell cycle. When checkpoints are active and cells are challenged by DNA damage, hypoxia, metabolic changes or spindle disruption, normal cells will arrest. One common property of cancerous cells is the loss of those checkpoints. When cells lose checkpoint control and are challenged, they often undergo apoptosis.

The Leica MM Cell Cycle for Leica MM AF software from Leica Microsystems is designed for the quantitation of cell cycle stage for cells labeled with a DNA stain. Additionally, a mitosis-specific probe may be used to better identify M-phase cells and an apoptosis-specific probe may be used to identify cells undergoing apoptosis.

Images can be acquired using one, two or three different wavelengths for the DNA stain, M-phase marker and apoptosis marker.

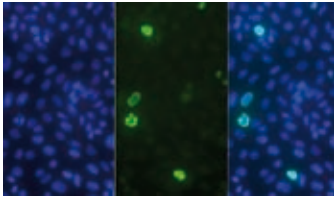
The module utilizes Adaptive Background Correction adapting the cell detection algorithm to the local intensity ranges between and within cells to provide the most robust segmentation available. This technique enables probe detection even with highly variable background fluorescence within a single image.

A simple interface minimizes setup efforts and at the same time enables users to customize the settings and measurements to obtain the best possible results specific to the type of cells used in the experiments.



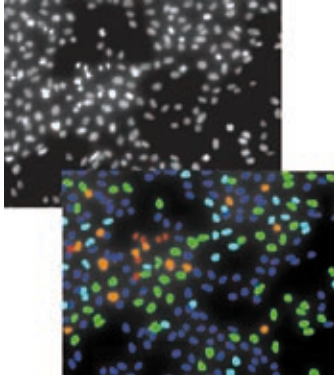
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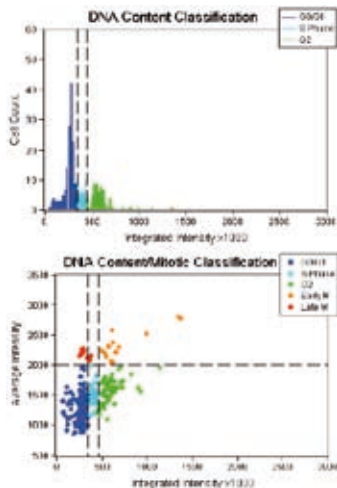
#### Multiple wavelength acquisition

The software acquires multiple wavelengths and color combines the images during visualization (right).



#### Robust analysis

Cell cycle classification can be performed with a single or multi wavelength assay. **Top:** CHO-K1 cells stained with Hoechst 33342. **Bottom:** The Cell Cycle module identifies cell cycle phases: G0/G1 (dark blue), S (light blue), G2 (green), Early M (orange) and Late M (red).



#### Interactive graphs

Cell classifications can be set by interactively moving cutoff values directly on the graphs.

## Configuration for analysis

- Step 1. Select the DNA stain image.
- Step 2. Specify the size range of cells and intensity above local background.
- Step 3. Set the classification criterion for mitosis by specifying the intensity of the DNA stain or an optional mitotic-specific stain.
- Step 4. If using an apoptotic stain, select the stain area, size range of cells and intensity above local background.
- Step 5. Preview classification results and interactively adjust cutoff values.
- Step 6. Optionally set reporting parameters.

## Interactive data display

Once the analysis is run, the Cellular Results table allows you to interactively view individual cells' data. Clicking one or multiple cells in the image highlights the data for the selected cell(s) in the table.

## Customization through journaling

Journals are sophisticated and powerful macros that record and perform a series of tasks without the need for a programming language. The modules can be incorporated into a Leica MM AF journal to increase the customization and automation of your analysis.

## Powerful data export capabilities

All measurements can be directly exported to a text file or Microsoft® Excel® for further analysis.

## Multi-parameter analysis

The Application Module can generate a number of field or cell-by-cell parameters, including:

- Count and percentage of G0/G1, S, G2, early M, late M and apoptotic cells
- DNA area, mitotic and apoptotic integrated and average intensities

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