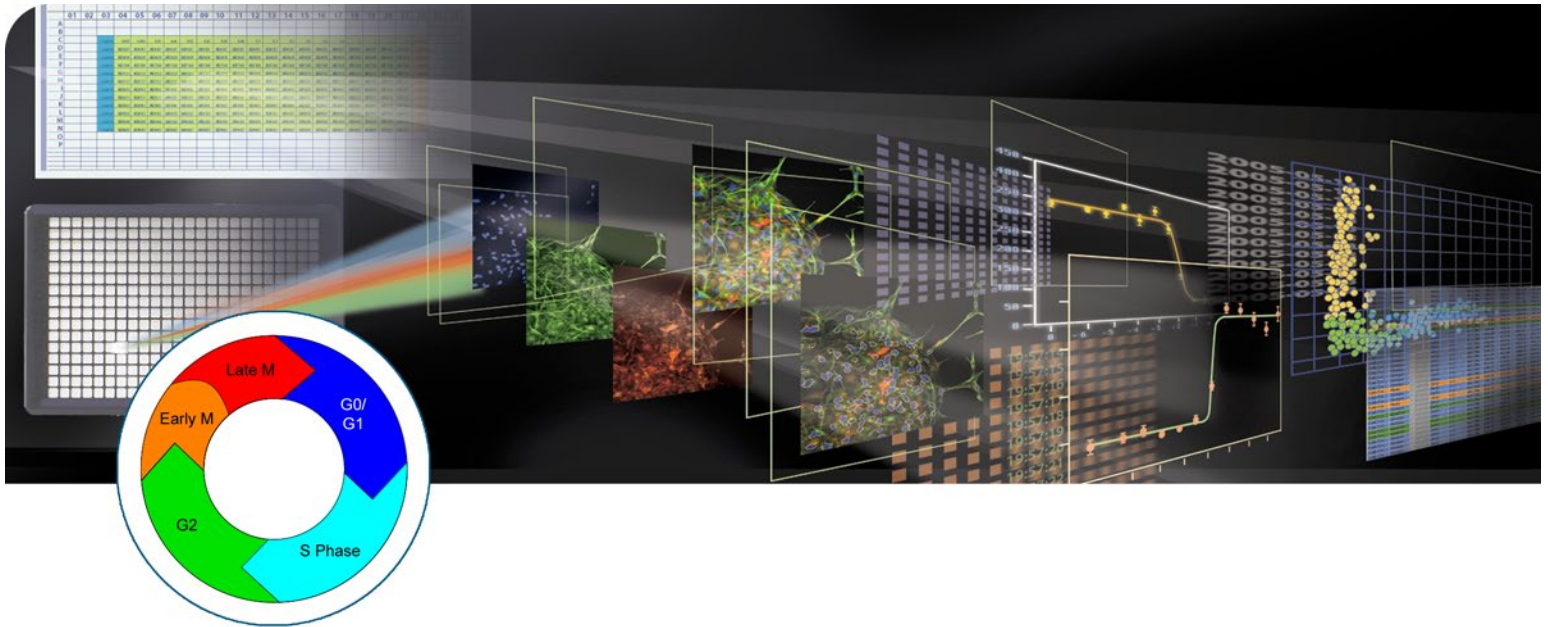# Molecular Devices

MetaXpress Software
Cell Cycle Application Module

ANALYSIS SOFTWARE DROP-IN FOR METAXPRESS SOFTWARE

→ QUANTITATION OF CELL CYCLE STAGES

→ OPTIONAL APOPTOSIS AND MITOSIS-SPECIFIC STAINS

→ 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. With the appropriate tools, researchers can screen for drugs that cause cell cycle arrest or cell death.
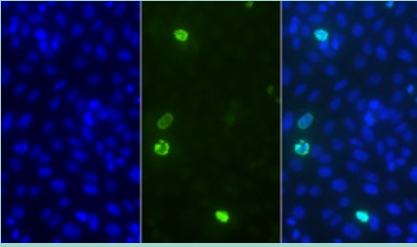
The Cell Cycle Application Module for MetaXpress® Software from Molecular Devices is designed for the quantitation of cell cycle stage for cells labeled with a DNA stain. Additionally, a mitosis-specific probe may be used to better identify M-phase cells and an apoptosis-specific probe may be used to 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 (ABC) which adapts the detection algorithm to the local intensity ranges within cells to provide the most robust segmentation available in an image-based screening system. ABC enables probe detection even with highly variable background fluorescence within a single image.
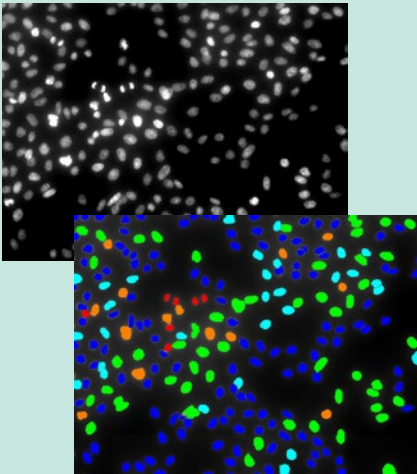
A simple interface minimizes setup efforts and analysis settings can be configured once and saved for future use or customized to fit your experiment.
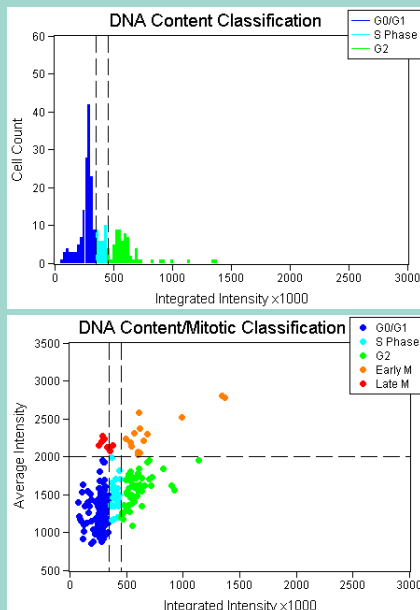
Multi-Wavelength Acquisition

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 were imaged with a 20x objective using MetaXpress Software. 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 a cell in the image highlights the data for the selected cell in the table.

CUSTOMIZATION THROUGH MACROS

MetaXpress is seamlessly integrated with the power and flexibility of MetaMorph® and its sophisticated and powerful macros that record and perform a series of tasks without the need for a programming language.

VALIDATED DATA

Development of application modules includes research and testing with a library of in-house and third-party data sets.

POWERFUL DATA EXPORT CAPABILITIES

All measurements can be directly exported to ORACLE®, Microsoft® SQL, a text file or Microsoft® Excel®.

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

ORDERING INFORMATION

Cell Cycle Application Module for MetaXpress: Part Number: 9500-0040

FOR MORE INFORMATION

Check our web site
www.moleculardevices.com

SALES OFFICES

→ USA & Canada +1-800-635-5577

→ Brazil +55-11-3616-6607

→ China (Beijing) +86-10-6410-8669

→ China (Shanghai) +86-21-6887-8820

→ Germany 00800 665 32860

→ Japan (Osaka) +81-6-7174-8831

→ Japan (Tokyo) +81-3-6360-5260

→ South Korea +82-2-3471-9531

→ United Kingdom +44-118-944-8000

Check our web site for a current listing of our worldwide distributors.
www.moleculardevices.com

Molecular Devices