MetaXpress High-Content Image Acquisition and Analysis Software

MOLECULAR DEVICES

Accelerate your discoveries

Quickly identify and quantify heterogeneous, sub-cellular and multi-parametric responses in diverse biological systems

Capture high-resolution images, recognize and segment objects, calculate parameters, and then translate your information into meaningful data. At Molecular Devices, we're inspired by your creativity to solve research challenges. Our goal is to provide you with the tools that let you build a successful High-Content Screening (HCS) infrastructure. Our MetaXpress® High-Content Image Acquisition and Analysis Software is the cornerstone of this infrastructure. It is built on our industry-leading software that has been providing scientists with insights into the world of cellular function for over 30 years. We took our extensive experience with cellular imaging and analysis techniques and put it all in one package, delivering an HCS solution as unique as your research.

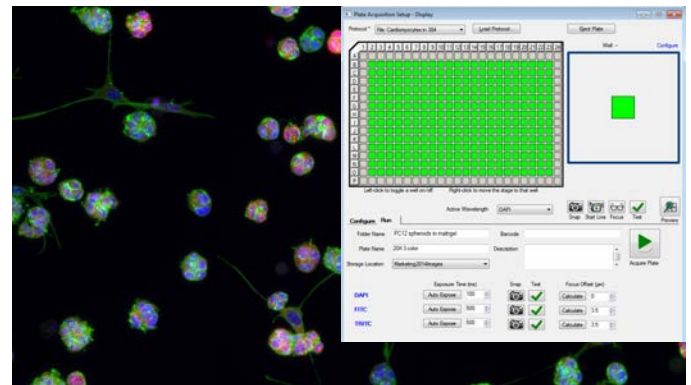# An end-to-end solution for screening your most complex biological questions

Creating an intuitive HCS workflow requires many components working in concert. Our MetaXpress software ties together every step seamlessly, from acquisition to data management.

Image acquisition
ImageXpress systems

Third-party
imaging systems

Data management
MDCStore solution

Image analysis
MetaXpress and
MetaXpress PowerCore
software

Data mining
AcuityXpress software

Acquire

MetaXpress software offers the precise control you need to acquire images with the best possible quality.

- Capture crisp, high-resolution images using a range of objectives from 1x to 100x at various numerical apertures

- Maintain robust focus across a range of sample types with our easily configurable laser-based or image-based auto-focusing system

- Easily integrate live cell acquisition and quantify 3D measurements of thick samples or kinetic assays using the acquisition and analysis wizard

- Halve your exposure time, or increase assay quality by 30% using the digital confocal option in the acquisition interface
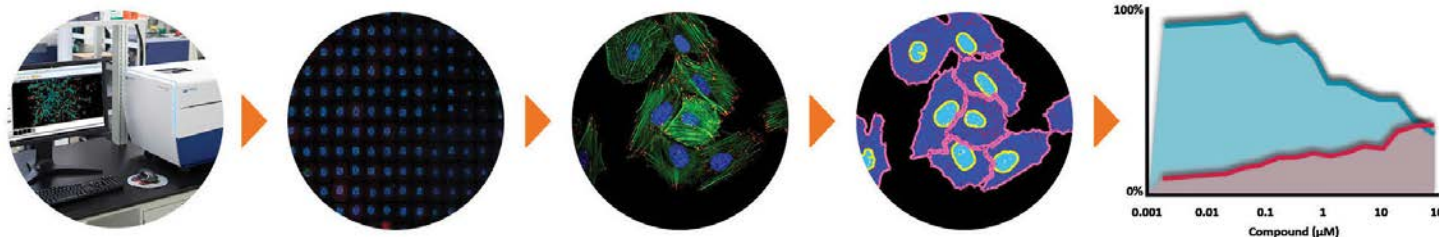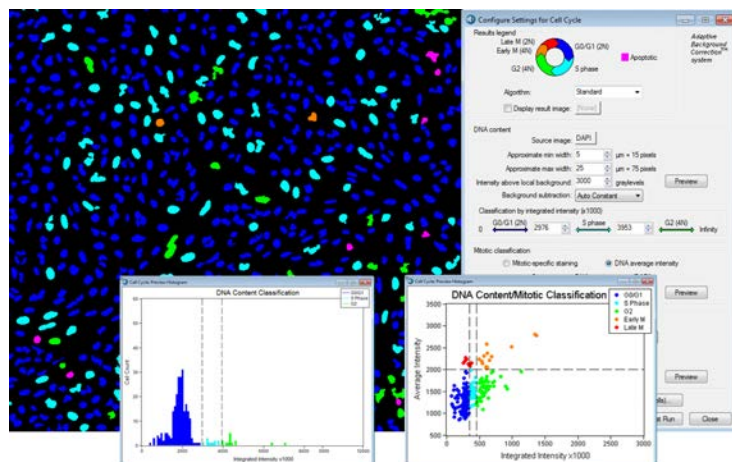
Analyze

Expedite image analysis and data processing using our MetaXpress software with application modules that allow you to quickly and easily analyze your data.

Modular toolbox

Set up hundreds of routinely used HCS assays whether you're a novice or an expert. MetaXpress software application modules give you an interactive environment to quantify 2D and 3D measurements, including size, intensities, and distance.

Intelligent segmentation

All MetaXpress software application modules are equipped with a proprietary adaptive background correction algorithm, which adjusts image segmentation to the local intensity ranges and shape features within and between cells. This capability gives you the most robust segmentation available in an image-based screening system and improves detection on both phase contrast and fluorescently labeled images. Save analysis results at the cell-by-cell and image-by-image levels with segmentation overlays and review them interactively by selecting a cell and visualizing the corresponding analysis data or vice versa.

Store

MDCStore Data Management Solution and MDCStore Xchange Service provide a seamless solution for storing, organizing, and sharing your valuable data. No extra steps are required to transfer data to MDCStore after acquisition, so you can re-analyze your data without accessing the acquisition system, maximizing the availability of the instrument for further imaging. Save experiment protocols and share them with any ImageXpress or MetaXpress system connected to the MDCStore Data Management Solution to standardize routines in your laboratory or across your organization.
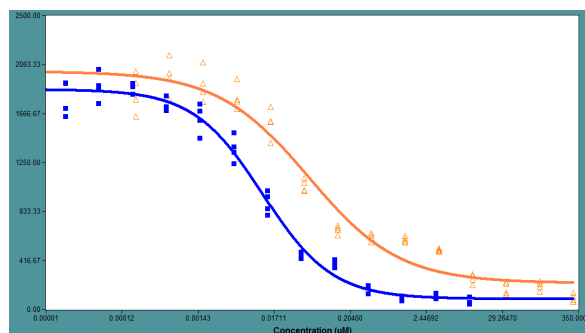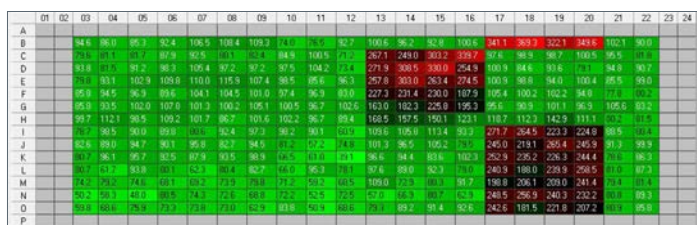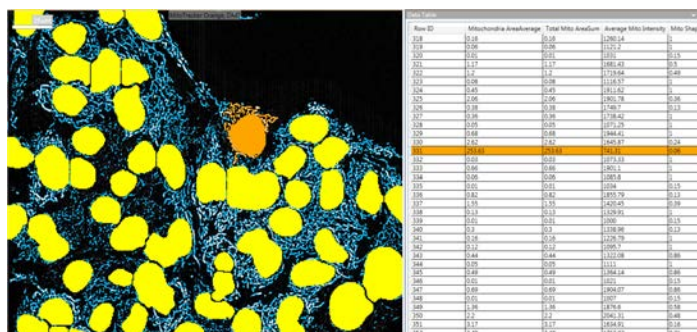
Schedule automatic data transfer between third-party hardware sources and your secure database, and export data to 3rd party and OME compatible files. MDCStore Xchange Service can also be set up to automatically transfer images across two designated locations, making it easy to share data in your file format of choice.

Visualize

Review your results with ease, minimizing the need to switch between applications by simultaneously viewing image thumbnails and plate heatmaps. Analyze, interpret, and mine data further with AcuityXpress™ High-Content Informatics software.

Key features include:

- Integration into MDCStore Data Management tool for easy access to needed files

- Bi-directional image viewer that facilitates data quality control by connecting images to numerical data

- Multi-parametric analysis and visualization

- Dose response analysis and curve fitting with over 30 different predefined functions

Customize

Our solution is scalable and adaptable to fit your ever changing and unique research needs.
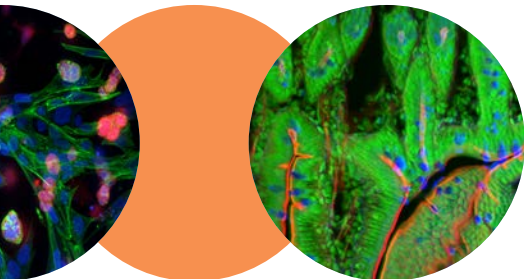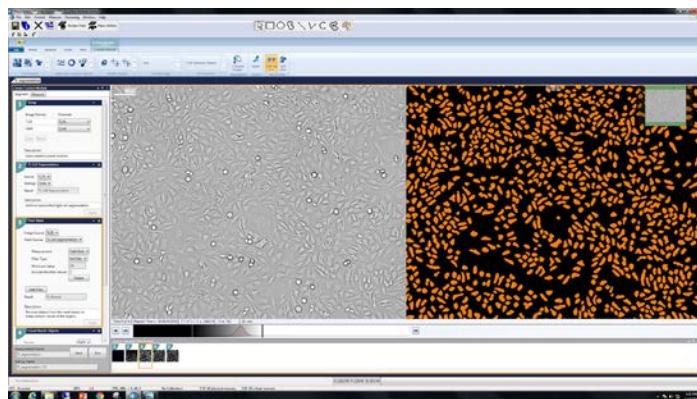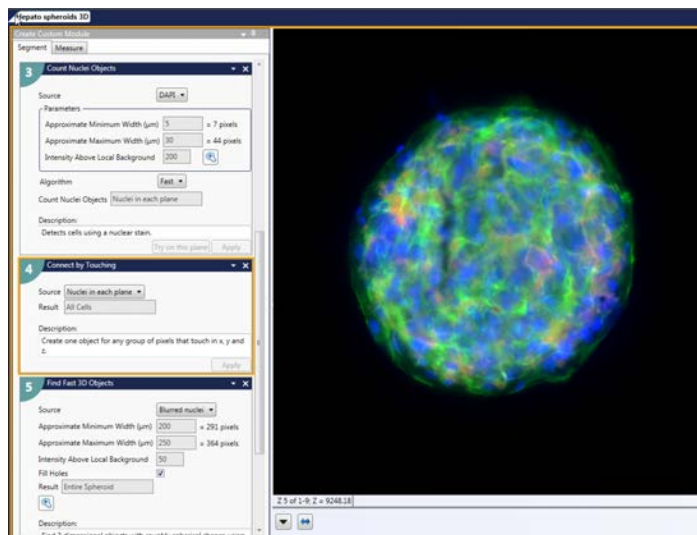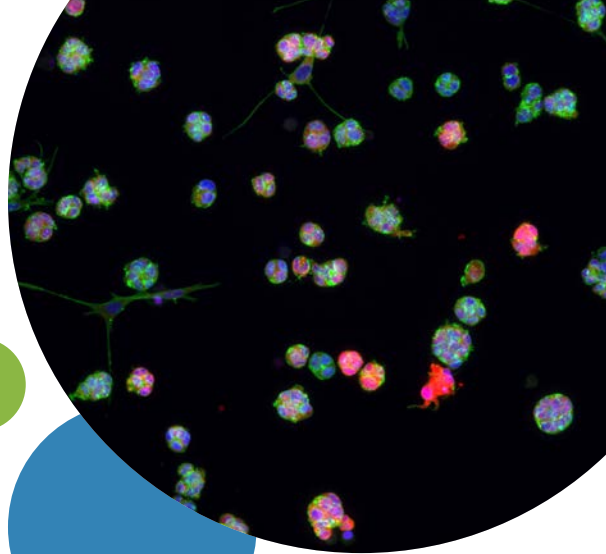
Custom module editor

Build specific analysis capability by combining a series of subroutines. With our step-by-step, interactive editor, you can create challenging, multi-step algorithms such as counting punctae in neurite outgrowths, and then running them in minutes using MetaXpress® PowerCore™ software.

3D analysis

Increase the biological relevance of your screening assays with an integrated and seamless acquisition and analysis of 3D data. Simplify quantification of 3D structures with volume, intensity, and distance measurements.
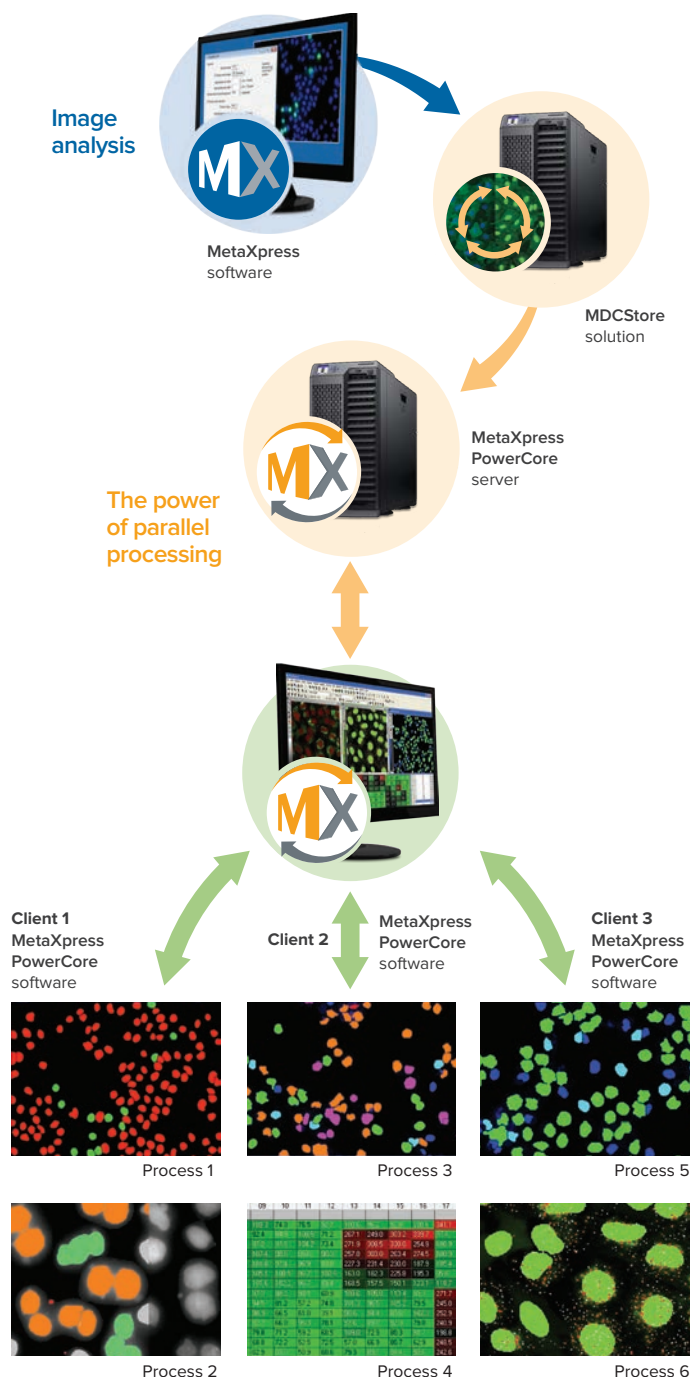
Journals

For ultimate customization of acquisition and analysis, journals enable multi-step routines such as whole-well scanning at low magnification and localizing objects of interest. Develop custom journal macros including automatic integration of intelligent hardware control based on your image analysis results.
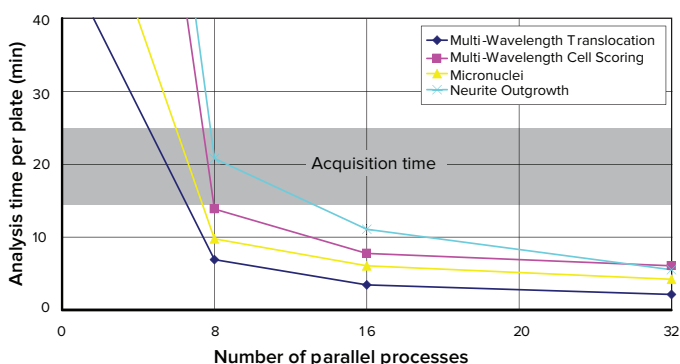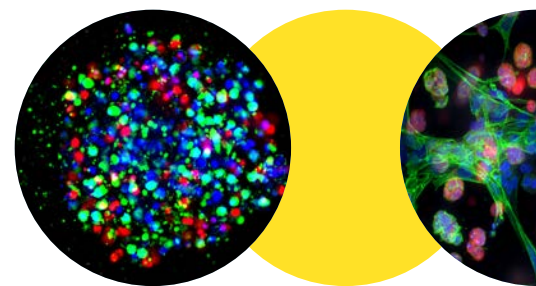
Accelerate

The MetaXpress PowerCore software is a distributed analysis platform with a server that divides plate analysis into small processes and distributes them to multiple clients. Each MetaXpress PowerCore software client, running on multiprocessor computers, executes analysis and relays the results to the server. Built-in flexibility accommodates time and 3D acquired images as well as single plane data. The scalable design accelerates your image analysis at no cost to segmentation quality, overlays, or the large number of analysis outputs. When the analysis is complete, the server efficiently saves all data into the MDCStore database, so results are accessible within your laboratory or across your organization.

Put your HCS capability into overdrive with MetaXpress PowerCore software. Typical basic research or HCS configurations will expedite MetaXpress software application module analysis times by 5x-10x—as fast as acquisition. Using our scalable solution, increase speed further by adding more processors. Core facilities or high-throughput imaging environments can accelerate analysis speeds 10x-40x to support multiple ImageXpress systems running in parallel at full capacity. Similarly, scale up allows re-analysis of archived images at speeds up to 25-fold faster than acquisition.

Image analysis

MetaXpress software

MDCStore solution

The power of parallel processing

MetaXpress PowerCore server

Client 1 MetaXpress PowerCore software

Client 2

MetaXpress PowerCore software

Client 3 MetaXpress PowerCore software

Process 1   Process 3   Process 5

Process 2   Process 4   Process 6

Analysis faster than acquisition

Chart legend:
- Multi-Wavelength Translocation
- Multi-Wavelength Cell Scoring
- Micronuclei
- Neurite Outgrowth

Acquisition time

Analysis time per plate (min)

Number of parallel processes

Ordering information

Our experienced scientific teams are available whenever you have support inquiries, issues, and requests for applications or technical information. When you're ready to take your research to the next level, our applications scientists, trained in the latest technological advancements and assay development techniques, will help get you there.

MetaXpress High-Content Image Acquisition and Analysis Software:

- MDCStore High Content Data Management Solution (included)

- Standard licensing is transferable to the computer of choice

- Network licensing allows multiple users to simultaneously connect to software

- AcuityXpress™ Informatics Software, data visualization, mining, and hit selection are ready to use upon system installation

MetaXpress PowerCore High-Content Distributed Image Analysis software for high-throughput image analysis:

- Various licensing is available to satisfy multiple parallel processes

MetaXpress software application modules:

- Optional modules can be added to the MetaXpress software license

Product	Part number
Hardware control options	
Digital Confocal option for ImageXpress Micro systems	5016604
External control for screening acquisition	9500-0024
File transfer and scheduling	
MDCStore Xchange Service	9500-0159
Application modules	
Custom Module Editor	9500-0158
3D Analysis (requires Custom Module Editor)	5047663
Curve fitting	5058772
Transmitted light segmentation (requires Custom Module Editors)	5058774
Angiogenesis tube formation	9500-0016
Cell cycle	9500-0040
Cell health	9500-0035
Cell scoring	9500-0037
Count nuclei	9500-0017
Granularity	9500-0032
Live/dead	9500-0034
Mitotic index	9500-0036
Micronuclei	9500-0045
Monopole detection	9500-0039
Multi-Wavelength cell scoring	9500-0038
Multi-wavelength translocation	9500-0044
Neurite outgrowth	9500-0015
Transfluor® Assay	9500-0033
Translocation* (includes Translocation-Enhanced*)	9500-0014
Transfluor HT Assay	9500-0043
Nuclear translocation HT	9500-0041
Cell proliferation HT	9500-0042
All MetaXpress software application modules	5062036

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Check our website for a current listing of worldwide distributors.

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