High-content imaging solution with proprietary spinning disc confocal

The ImageXpress® Micro Confocal (IXMC) system is a high-content solution that can switch between widefield and confocal imaging of fixed and live cells. It can capture high quality images of whole organisms, thick tissues, 2D and 3D models, and cellular or intracellular events. The spinning disc confocal and sCMOS camera enable imaging of fast and rare events like cardiac cell beating and stem cell differentiation. With the MetaXpress software, the system enables many confocal imaging applications from 3D assay development to screening.

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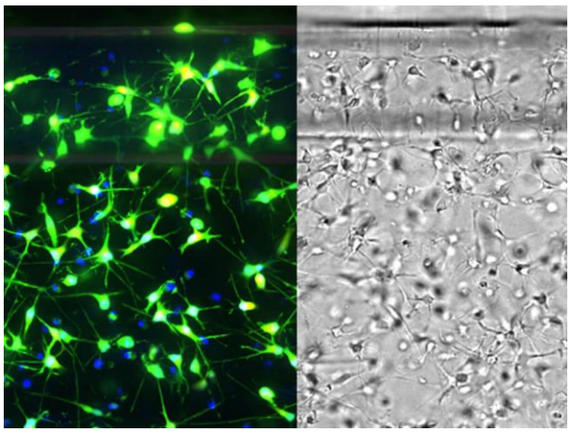
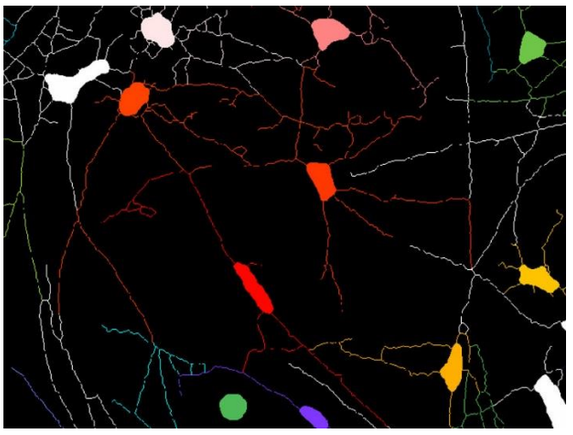
Applications of ImageXpress Micro Confocal High-Content Imaging System

- 

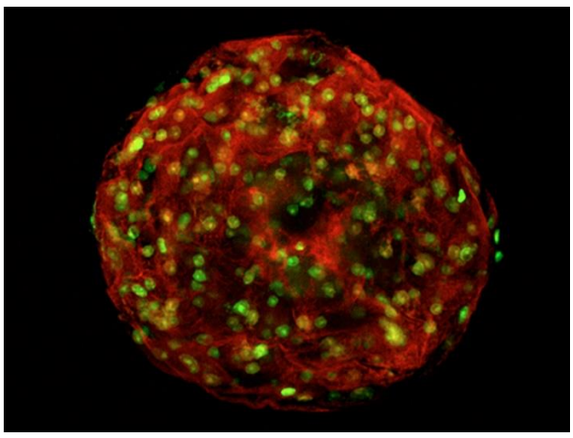
Organ-on-a-Chip Assays

Emulating organ physiology by co-culturing cells in a supportive 3D matrix and using microfluidic channels to perfuse nutrients or compounds over the resulting cellular structures, is rapidly gaining popularity as a biologically relevant screening model for new drugs or toxicity. The ImageXpress system provides a turnkey solution for both 2D or 3D applications and can accommodate many different types of slide and plate formats.

- 

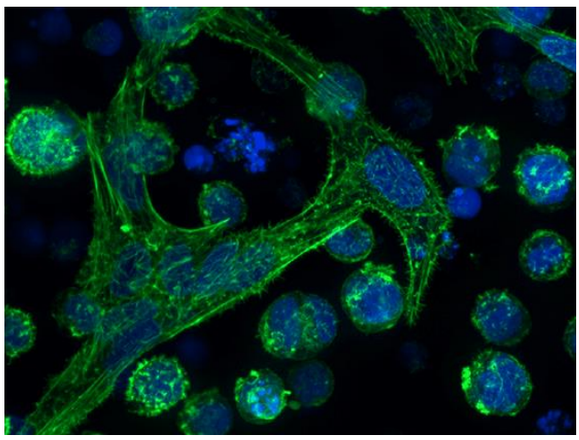
Neurite Outgrowth / Neurite Tracing

Neurons create connections via extensions of their cellular body called processes. This biological phenomenon is referred to as neurite outgrowth. Understanding the signaling mechanisms driving neurite outgrowth provides valuable insight into neurotoxic responses, compound screening, and for interpreting factors influencing neural regeneration. Using the ImageXpress Micro system in combination with MetaXpress Image Analysis Software automated neurite outgrowth imaging and analysis is possible for slide or microplate-based cellular assays.



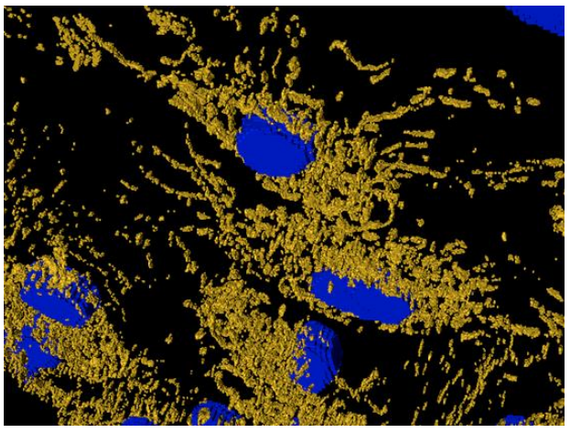
Spheroid Assays

Three-dimensional (3D) cells cultured into spheroids provide a more complete and physiologically predictive model especially for cancer research. Acquiring measurements from the larger structure involves acquiring images from different depths within the body of the spheroid and analyzing them in 3D or collapsing into a single 2D stack before analysis.
The ImageXpress Micro system
and MetaXpress software are designed to make acquisition and analysis of 3D spheroids fast and accurate.



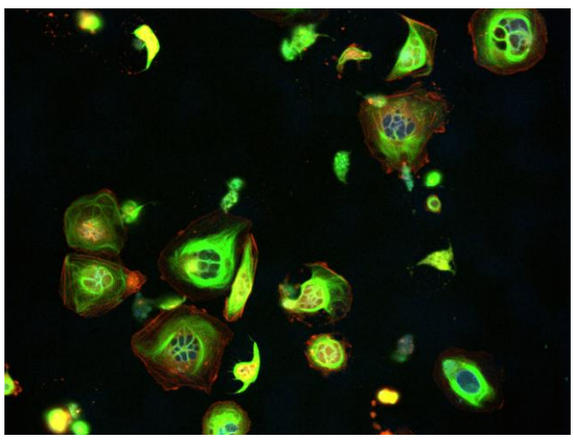
3D Gel Matrix Assays

The development and integration of three-dimensional (3D) assay models are becoming popular to drive translational biology. Our ImageXpress system allows superior visualization of thick samples by minimizing background fluorescence and increasing sharpness, resulting in accurate image segmentation. Increase the biological relevance of your screening assays with a seamless integration between acquisition and analysis of cells in a 3D space to yield volume, intensity, and distance measurements.



3D Cell Imaging and Analysis

Three-dimensional (3D) cell models are physiologically relevant and more closely represent tissue microenvironments, cell-to-cell interactions, and biological processes that occur in vivo. Now you can generate more predictive data by incorporating technologies like the ImageXpress system with the integrated 3D Analysis Module in MetaXpress® software. This single interface will enable you to meet 3D acquisition and analysis challenges without compromise to throughput or data quality, giving you confidence in your discoveries.



Toxicity Screening

Screening for off-target or toxic effects is very important during the development of new drugs and for the extension of the therapeutic potential of existing molecules. ImageXpress systems are fully integrated hardware and software platforms for automated acquisition and analysis of images for high-throughput cell-based cytotoxicity testing. Configured with optional environmental control, living cell responses or kinetic reactions can be monitored in real time for several days.

Specifications & Options of IXMC High-Content Imaging System

General specifications:

Camera	4.2 M Pixel sCMOS (2048X2048), 6.5µmX6.5µm 16 bit
Field of view 10x	1.96 mm^2
Speed	>200,000 wells/day
Objectives	4X/0.2, 10X/0.45, 20X/0.75, 20X/0.45Ph, 40X/0.95, 60X/0.95
FL Filters	DAPI, FITC, TRITC, TEXRED, CY5
Autofocus	Laser + image autofocus
Phase contrast	✓
Transmitted light	✓
Brightfield	✓
Plates supported	Up to 1536-well plates
Microscope slides	✓
Robotics/Automation-compatible	✓
Temperature control	✓
CO_2 and O_2 control	✓
Confocal	✓
Confocal Pinholes	60 µm for speed; 40 µm for high resolution
Widefield	✓
Deconvolution	AutoQuant Widefield 3D Deconvolution
Software	MetaXpress
MDC store data management	✓
Custom module editor	✓
3D Analysis Option	✓

Any 10 Application Modules

Angiogenesis, Cell Cycle, Count Nuclei, Live/Dead, Multi-wavelength Cell Scoring, Neurite Outgrowth, Micronuclei, Transfluor, Translocation

Three analysis workstations & Offline Analysis Software

Table one: Objectives of MD IXMC

Objective Position	Objective Magnification	Objective Type	Coverglass Thickness (mm)	Numerical Aperture N.A.	Working Distance (mm)	Collar Correction Ring
1	20X	PLAN APO Lambda	0.17	0.75	2	No
	20X Ph1	S Plan Fluor ELWD ADM	0-2	0.45	8.2-6.9	Yes
2	4X	PLAN APO Lambda	Not an issue	0.2	20	No
3	10X	PLAN APO Lambda	0.17	0.45	4	No
4	40X	PLAN APO Lambda	0.11-0.23	0.95	0.16-0.25	Yes
	60X	PLAN APO Lambda	0.11-0.23	0.95	0.11-0.21	Yes

Table two: Light Source and Filter info

FL Color Channel	Light Power (mW)	Excitation Band Filter (nm)	Dichroic Edge Wavelength (nm)	Emission Central Wavelength (nm)	Emission Band Range (nm)	Emission Band Width (nm)
DAPI	258	377/28	409	447	417-477	60
FITC	218	475/34	506	536	516-556	40
TRITC	413	531/40	562	593	573-613	40
TEXRED	318	560/32	593	624	604-644	40
CY5	220	631/28	660	692	672-712	40

High-content image analysis software featuring time lapse analysis

MetaXpress® High-Content Image Acquisition and Analysis Software is a comprehensive solution for high-content analysis featuring a tightly orchestrated and integrated workflow. The portfolio of application modules supports a range of needs from ease-of-use through to proprietary assay design. The software includes powerful and elegant tools for 2D and 3D imaging such as time lapse analysis. With the assistance of our acquisition setup wizard, you'll be generating data in minutes.

- **Acquire and analyze in 2D and 3D**
  MetaXpress software is a platform for 2D and 3D image acquisition and analysis. The 3D Image Analysis Module can analyze spheroids, microtissues, cells in a 3D matrix, and small organisms.

- **Streamline image analysis**
  The modular toolbox allows for the quick setup of hundreds of routinely used high-content assays. Choose from our optional selections of turnkey application modules for greater convenience.

- **Design custom analyses easily**
  Quickly create multi-step routines with the Custom Module Editor. It enables advanced analyses such as identifying objects within objects, and creating morphometric classifiers for shape analysis.

Features

- **Z-stacks and 3D volumetric analysis**
  The integrated acquisition and analysis application modules for 3D cell models simplify high-throughput quantification of 3D structures with volume, intensity, and distance measurements.

- **Fast acquisition and analysis**
  Easily captures fast biological functions with our patentedfast frame rate that can capture 50 frames per second. A 1-color, 384-well plate analysis can be performed in a little as six minutes.

- **Intelligent segmentation**
  Application modules feature turnkey image segmentation for label-free and fluorescently labeled images. The Custom Module Editor offers advanced tools for improved segmentation.

- 
  Scalable parallel processing
  MetaXpress PowerCore™ Software runs analysis routines in minutes. This optional module leverages the power of parallel processing to accelerate analysis.

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  Data management solution
  MDCStore™ Data Manager, included with MetaXpress software, organizes images, experimental information, and data analysis. It enables seamless manipulation of complex sets of images and metadata.

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  Advanced informatics
  AcuityXpress™ High-Content Informatics Software is an optional enterprise level platform for advanced data mining, analysis, statistics, and visualization. It shares the MDCStore database for seamless integration.