MOLECULAR DEVICES

CellReporterXpress

Image Acquisition and Analysis Software

Easy-to-learn software optimized for automated microscopy using the ImageXpress Pico system

Microscopy imaging for cell counting through to complex image analysis

The CellReporterXpress® Automated Image Acquisition and Analysis Software works with the ImageXpress® Pico Automated Cell Imaging System. It has a clean, easy-to-learn interface for performing quantitative analysis on images acquired from automated microscopy. The software enables distributed analysis of images for increased throughput and is ideal for scaling microscopy imaging with slides or microplates. An icon-driven, linear workflow with a range of predefined protocols provides a streamlined user experience.

Key Features

- 25+ preconfigured application protocols

- Automated focusing routines for a variety of cell-based imaging applications

- Region selection for acquisition

- Label-free analysis

- Click-to-find feature

- Side-by-side cell magnification

- Touchscreen capability
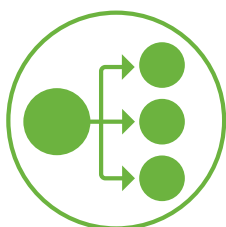
- Browser-based software

Analyze during acquisition

Reduce the time to run experiments with our integrated on-the-fly image analysis capability, allowing you to view numeric data during acquisition.

Simplify image analysis

Predefined analysis protocols for label-free and fluorescence imaging provides you with the ability to quickly run common biological assays while still allowing you to create and save your own protocols.

Share and access data from anywhere

The software makes sharing, presenting, and collaborating with peers easier, allowing multiple users to utilize the software simultaneously through browser-based remote access.

Providing focus and clarity
to your automated imaging needs

HCT116 cancer spheroids cultured in an ECM hydrogel and imaged with a reliable hardware autofocus algorithm, capturing images at different Z-planes with the Z-stack acquisition module.
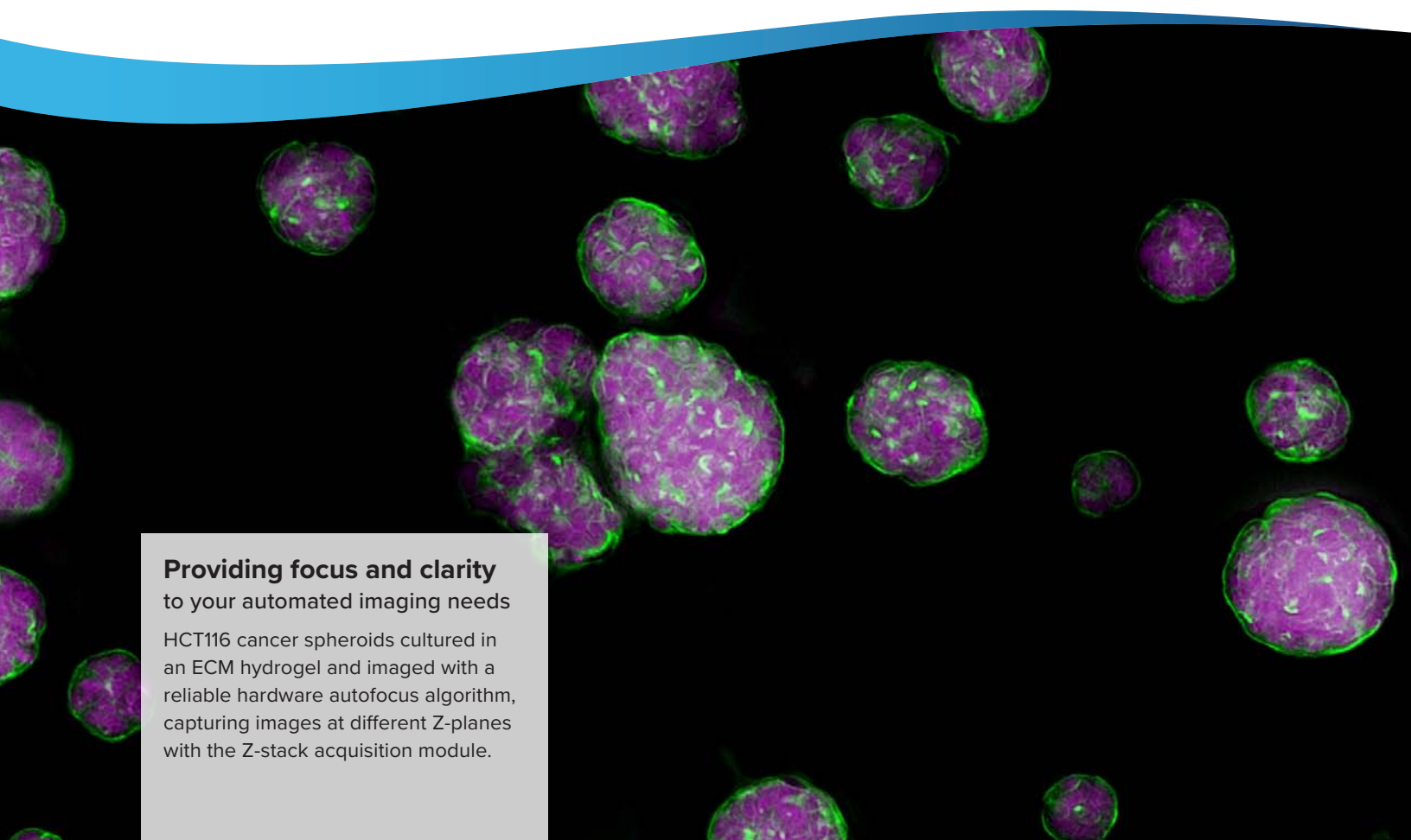
Intelligent image acquisition and analysis

This software, along with the ImageXpress Pico system, does more than imaging—it offers unparalleled analysis capabilities that simplifies image analysis for cell-based assays.
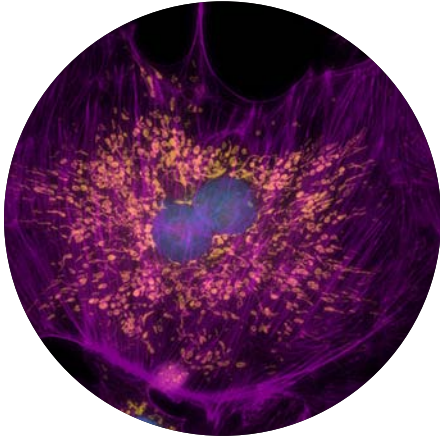
Increase resolution with on-the-fly deconvolution

Enhance contrast of images during acquisition with the Digital Confocal* 2D on-the-fly deconvolution option, allowing you to increase resolution and improve assay quality.
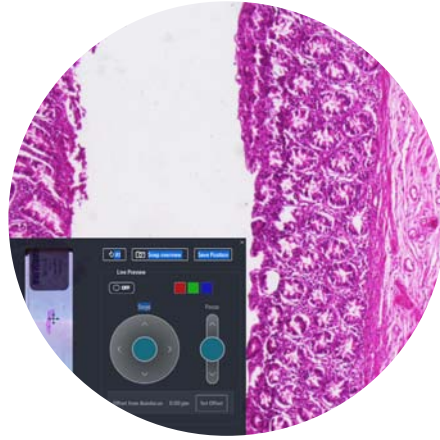
Identify regions of interest quickly and easily

Live Preview simplifies identification of regions of interest, letting you pan around the sample and interactively adjust focus with a virtual joystick, saving time and effort.
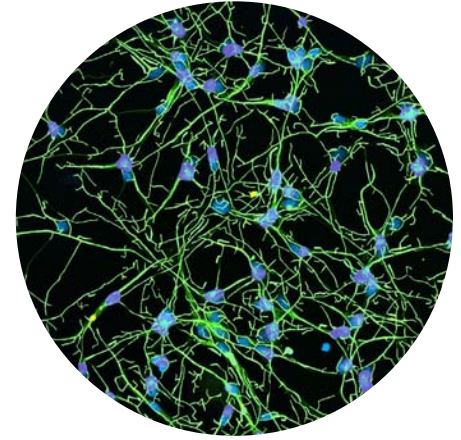
Remove the guesswork with preconfigured analysis protocols

Over 25 preconfigured analysis protocols ranging from simple cell counting to sophisticated neurite tracing analysis removes the guesswork from optimizing parameters.

## Monitor live cell assays with on-board environmental control

Multi-day, time-lapse, and live cell assays can be run using the on-board environmental system with options for humidity, CO_2, and O_2 control. Optimized to prevent Z-drift, the software also provides real-time monitoring of environmental state, ensuring optimal assay conditions.
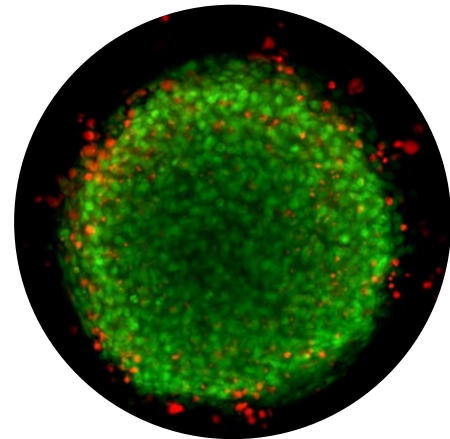
Capture deeper insights with Z-stack acquisition

Generate sharper images for more accurate segmentation using Z-stack acquisition. Acquire a series of images at different focal points to capture more detail than with a single slice. Users can include all slices or select which slices to include in the final projection.

*ImageXpress Pico Digital Confocal uses AutoQuant 2D Real Time Deconvolution
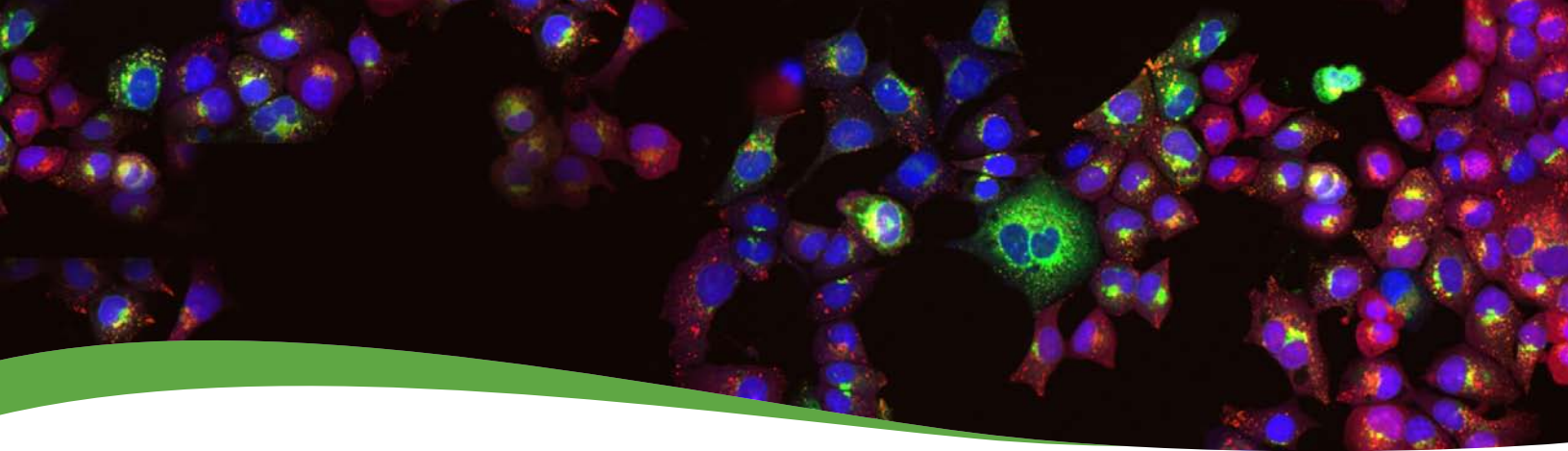
Key features

## Live Preview: Optimized for slide-based workflows

Simplify the identification of regions of interest. Visualize your sample prior to acquisition using the virtual joystick to pan around the sample, and interactively adjust focus. Live Preview, featuring "click-to-center" functionality, continuously updates the image so you can easily navigate your sample to find the desired field of view. Whether you're working on 96-well microplates, slides, or 35 mm culture dishes, Live Preview helps you to quickly and easily focus on what's important to your research.
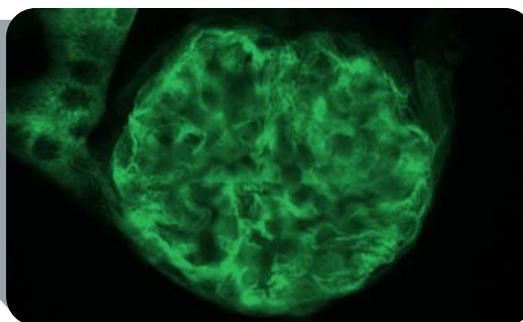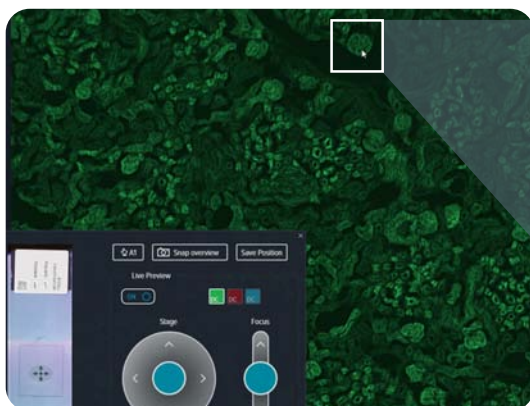

Easily find, zoom, and save regions of interest

Digital Confocal: Restorative 2D on-the-fly deconvolution

Significantly increase resolution and assay quality with Digital Confocal* 2D on-the-fly deconvolution. The Digital Confocal Option restores light to its original point of origin, allowing you to decrease exposure time and improve statistical significance of your observations. Digital Confocal is seamlessly integrated into the ImageXpress Pico system's fluorescent image acquisition workflow allowing you to capture images with higher signal-to-noise data for more precise segmentation and analysis.
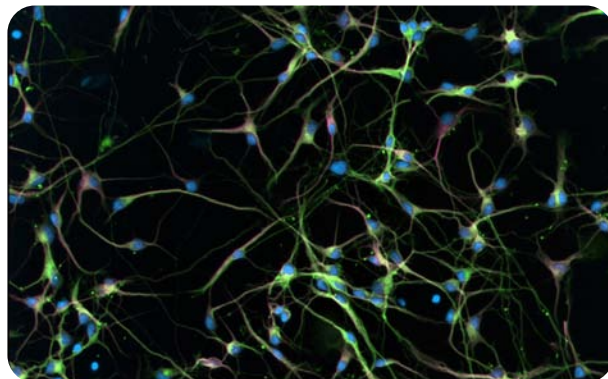
Standard widefield imaging
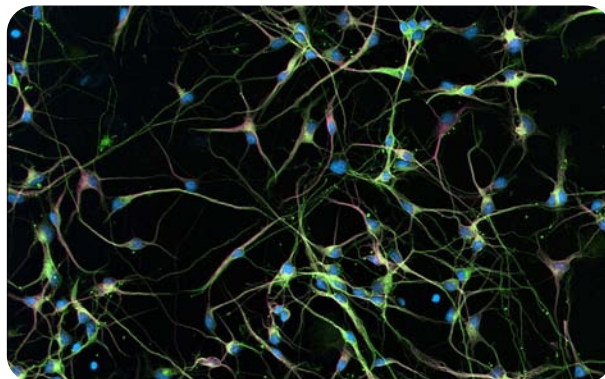
On-the-fly image deconvolution decreases exposure time while increasing resolution with Digital Confocal Imaging

*ImageXpress Pico Digital Confocal uses AutoQuant 2D Real Time Deconvolution

Key features

Environmental control and time-lapse imaging

Environmental control mimics the cell environment and enables you to run multiday studies, time-lapse, and live cell assays. With CellReporterXpress software, the ImageXpress Pico system provides visibility of environmental control settings for humidity, CO_2, and O_2 during acquisition to ensure that the system is running at peak performance during your assay.

Monitor and measure changes in cell proliferation and cell phenotype over time with reliable time-lapse imaging and on-the-fly image analysis. The Plate View provides users a convenient at-a-glance view of their time-lapse results.

Timecourse for cell proliferation
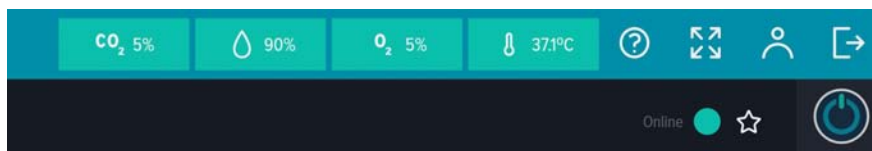
Monitor readings in real time.
Acquired sensor data is linked to the experiment.
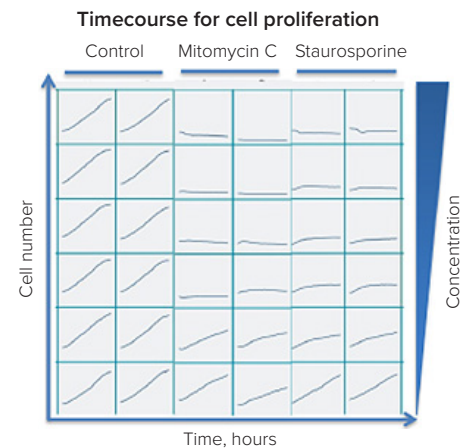
Multi-wavelength cell scoring

The ImageXpress Pico system with CellReporterXpress software features multi-wavelength cell scoring with up to four fluorescent stains.

The preconfigured protocol is ideal for counting and logging measurements of cells in multiple wavelength experiments. Using a fluorescent marker for the nucleus and additional markers for the cytoplasm, each wavelength is analyzed and cells are assigned multiparametric phenotypic profiles. A simple interface minimizes setup efforts, and analysis settings can be configured once and saved for future use or customized to fit a specific experiment. Segmentation parameters are set for each wavelength and the analysis is run across the well, selected wells, the entire plate, or multiple plates.
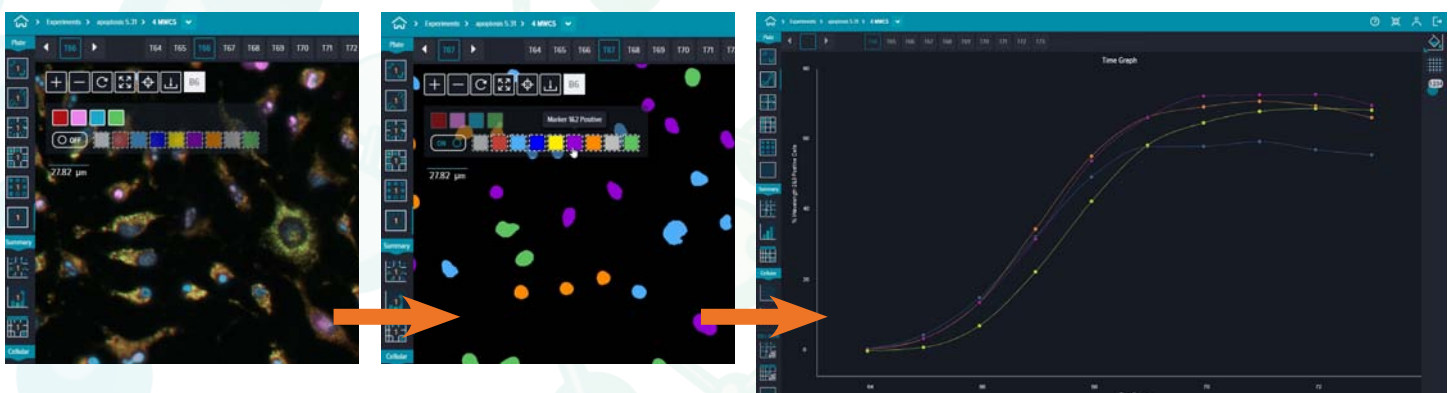
Go from samples to results in minutes

Automated focus routines

Automated focus algorithms for a variety of applications including custom organ-on-a-chip plates

The ImageXpress Pico system uses two robust autofocus mechanisms: **Detect Surface**, which is for hardware autofocus, and **Find Best Plane**, which is image-based autofocus. Hardware autofocus uses an LED beam to find reflective surfaces and is designed for speed. It works well for adherent samples in plates or chamber slides. When enabled, image-based autofocus searches a range for the best focus plane based on image contrast. It works well for slides with a coverslip or for samples in a plate that are not flat, such as suspension cells or spheroids. The ImageXpress Pico system with CellReporterXpress software provides reliable focusing across all of your labware to ensure high-quality imaging for a wide variety of sample types.

Detect surface algorithms

Plate Bottom

Hardware autofocus detects the surface closest to the objective (that is, the plate bottom). It works well for adherent samples in plates or chamber slides when imaging at low magnification or if your labware has a thick bottom. This is the fastest hardware autofocus option.
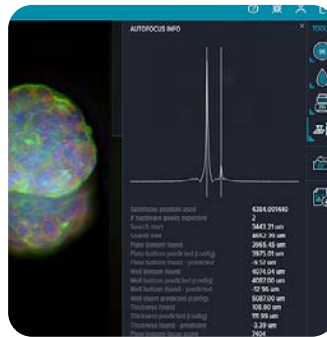
Well Bottom

Hardware autofocus detects the two surfaces closest to the objective (that is, the plate bottom and well bottom). The Well Bottom option is designed for samples in a liquid medium, such as well plates or chamber slides. This is the most commonly used hardware autofocus option.

Well Insert

Hardware autofocus detects the three surfaces closest to the objective (that is, the plate bottom, well bottom, and well insert). The Well Insert option is designed for well inserts in well plates or any labware design that has a distinct third surface.

Find Best Plane Algorithms

If the Detect Surface options do not provide satisfactory focus, select the Find Best Plane option to add image-based autofocus for the first channel within the selected search range. Adding image-based autofocus is useful for thicker samples, samples with variable best focus planes, or labware with variable thickness.

The Find Best Plane algorithms center on the surface detected by the hardware autofocus and search within a specific range to find the optimal focal plane. **Normal Search Range** searches a range of 7.5% above and 7.5% below the labware bottom, and **Wide Search Range** searches a range of 20% above and 20% below the labware bottom. Unlike these two options, which search around the surface, the **Superwide Search Range** searches a range of 300 μm above that surface.

Anchor Focus Position

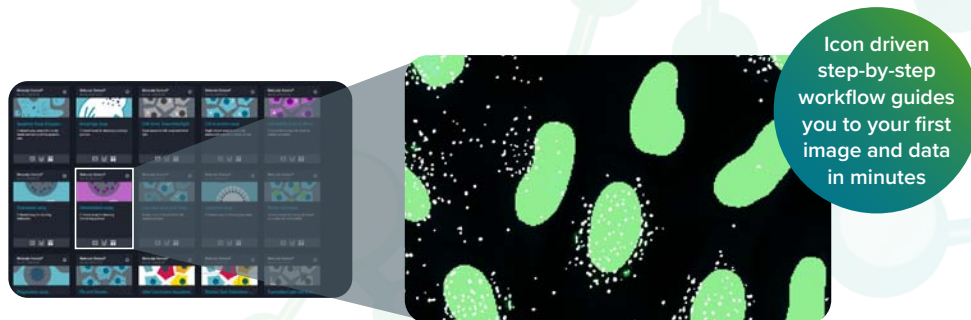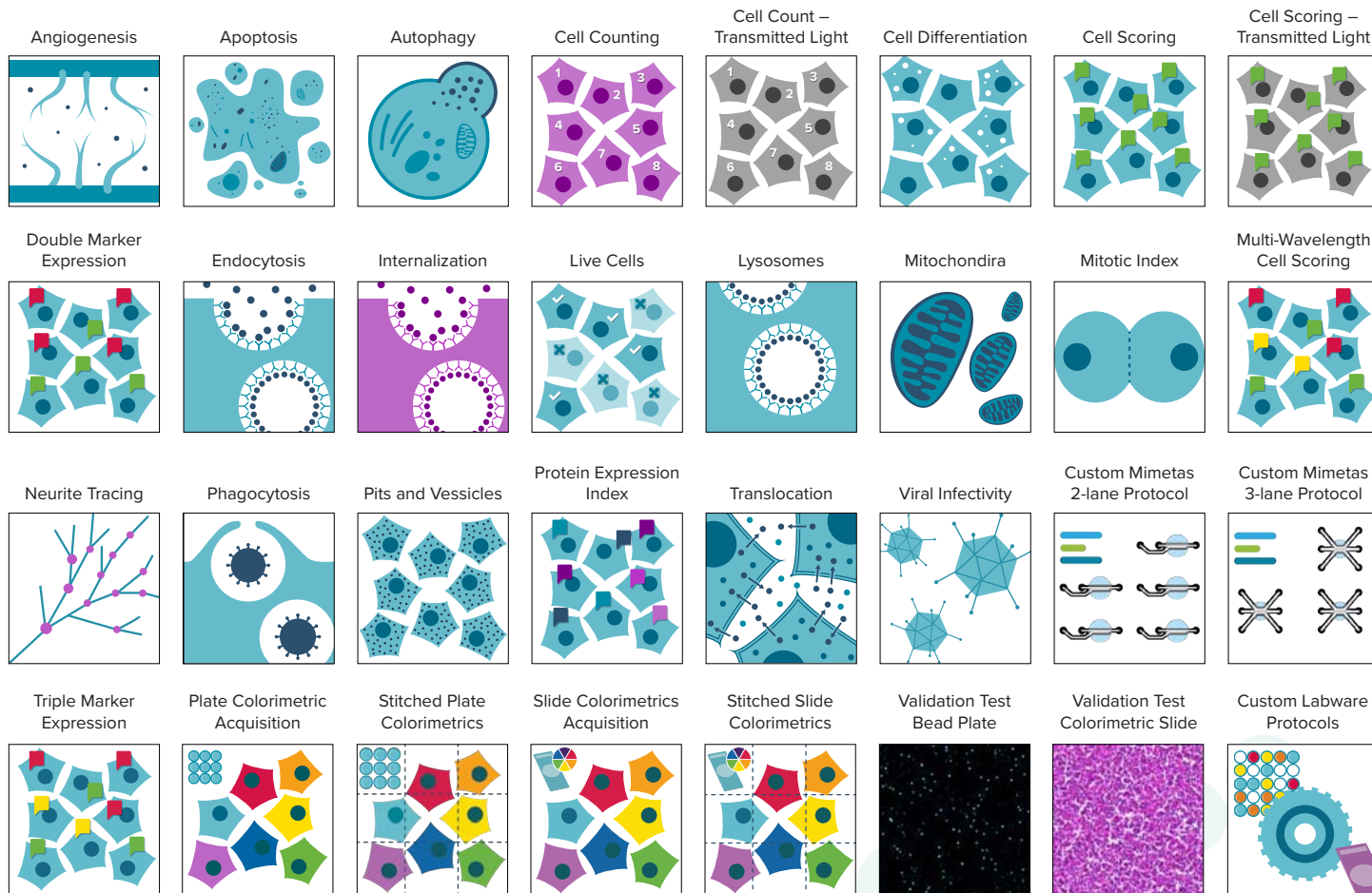For fastest screening speed, we have introduced the ability to select the **Anchor Focus Position** to save current focus position and disable the autofocus controls. The software uses the saved focus position for any ensuing snaps of preview images and for acquisition. This can dramatically speed the acquisition of plates at low magnification or when you are working with macroscopic samples like whole organisms or tissues.

Applications

From samples to results in minutes

The CellReporterXpress software features over 25 preconfigured acquisition and analysis templates optimized to collect the most pertinent information for various cell-based assays, removing the guesswork from optimizing parameters. User guided artificial intelligence routines optimize parameters automatically resulting in robust, easy-to-use analysis protocols.

| Angiogenesis | Apoptosis | Autophagy | Cell Counting | Cell Count – Transmitted Light | Cell Differentiation | Cell Scoring | Cell Scoring – Transmitted Light |

| Double Marker Expression | Endocytosis | Internalization | Live Cells | Lysosomes | Mitochondira | Mitotic Index | Multi-Wavelength Cell Scoring |

| Neurite Tracing | Phagocytosis | Pits and Vessicles | Protein Expression Index | Translocation | Viral Infectivity | Custom Mimetas 2-lane Protocol | Custom Mimetas 3-lane Protocol |

| Triple Marker Expression | Plate Colorimetric Acquisition | Stitched Plate Colorimetrics | Slide Colorimetrics Acquisition | Stitched Slide Colorimetrics | Validation Test Bead Plate | Validation Test Colorimetric Slide | Custom Labware Protocols |

Icon driven step-by-step workflow guides you to your first image and data in minutes

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