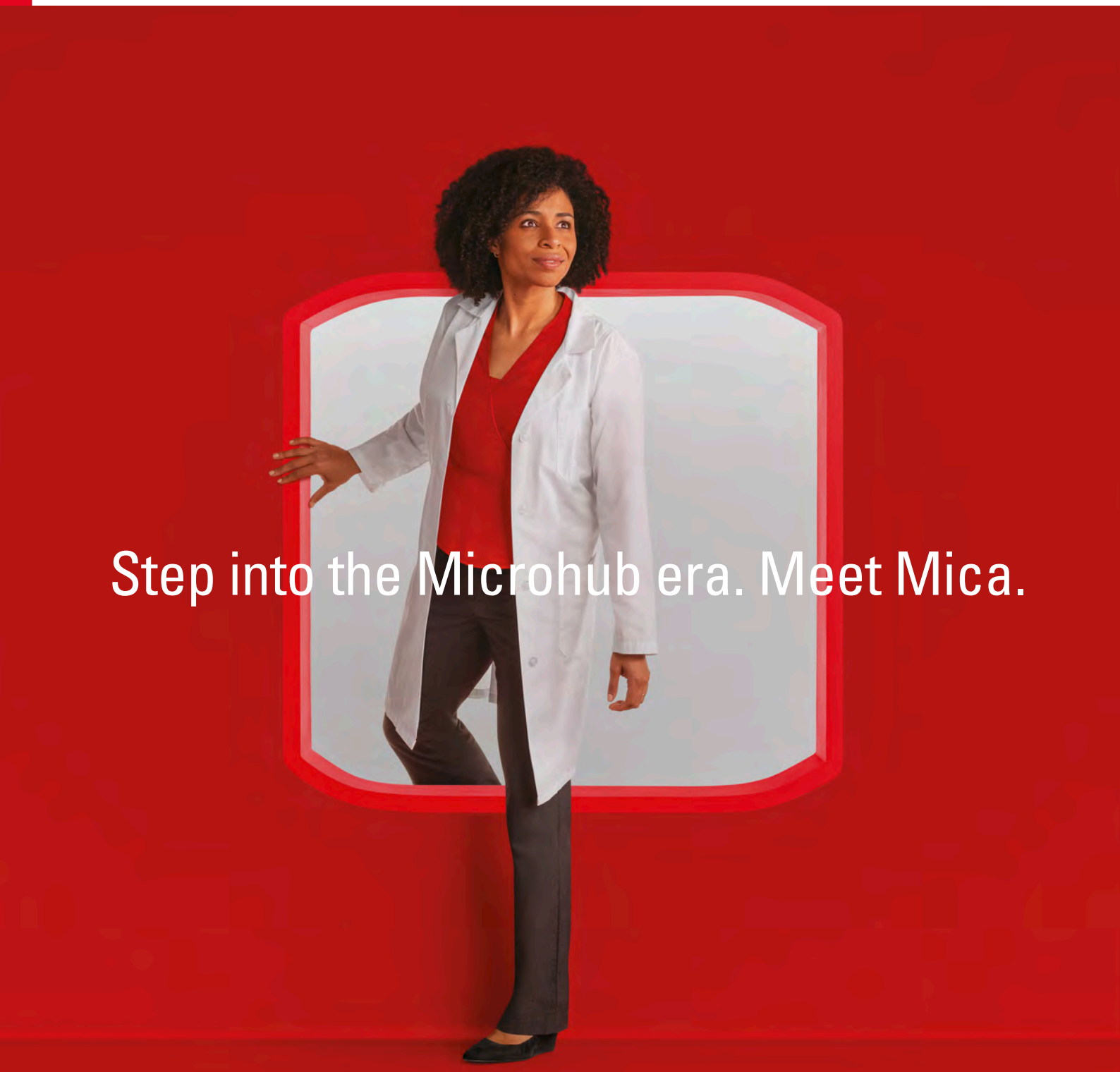
From Eye to Insight

Leica
MICROSYSTEMS



# Step into the Microhub era. Meet Mica.


# Mica.

# This changes everything.

The world's first Microhub has arrived. More than a highly automated microscope, Mica unites widefield and confocal imaging in a sample-protecting, incubating environment. With the simple push of a button, you have everything you need – all in one place – to supercharge fluorescence microscopy workflows, power-up your research and streamline your path to results.

**What if every scientist could access spatial information?**

Mica empowers every researcher to move from set up to beautifully visualized results and analysis efficiently, accurately, and confidently. Now you can focus on your science, not figuring out your microscope.

Powered by

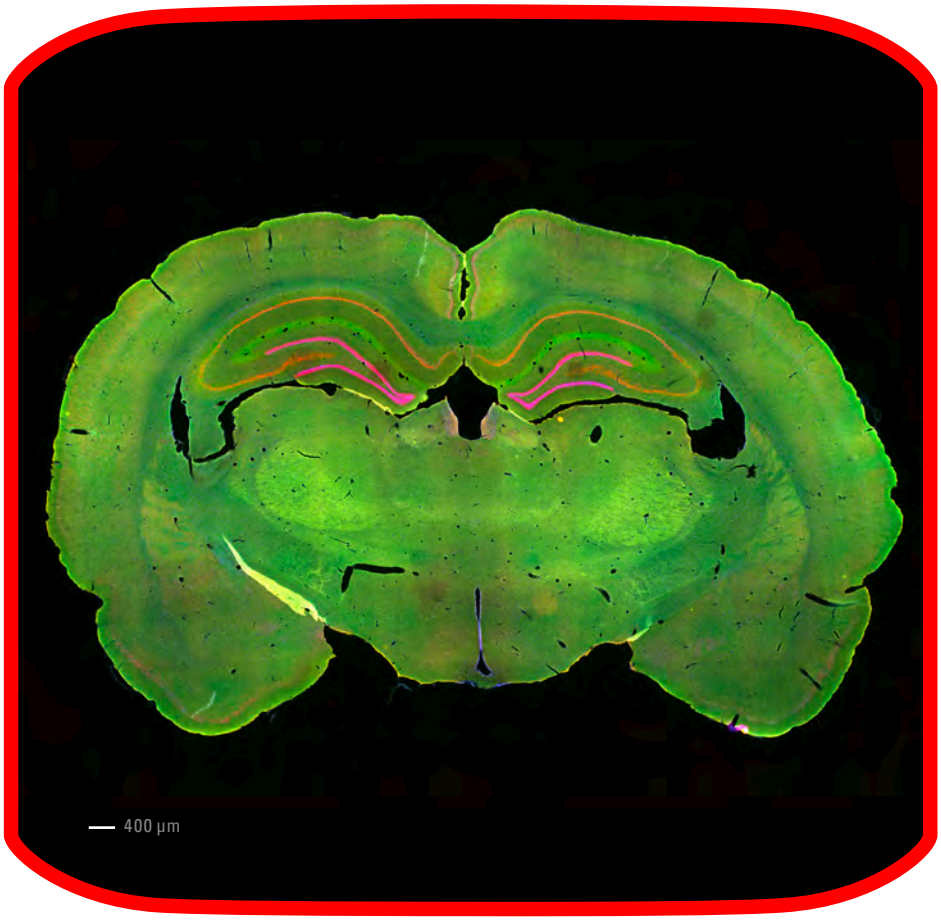
**Point scanning confocal**

**Sample finder**

**OneTouch-Auto Illumination**

**AI-based Analysis**

Eliminate over 85% of tedious setup steps that require special expertise




Tissue slice form the rat brain. Nuclei are stained with DAPI (blue), STL with FITC (green), astrocytes (GFAP) with Cy3 (yellow), and newborn neurons (NeuN) with Cy5 (red). 10x widefield tile scan, all 4 labels acquired simultaneously.

# Step into the era of Access for all

Everyone can now leverage microscopy to make more discoveries. Mica provides a clear sample overview and allows to easily change observation conditions with just a few clicks.

85% fewer steps to the first image

1/3 less time to the first image

1/2 of the training time

**Mica is an incubator**

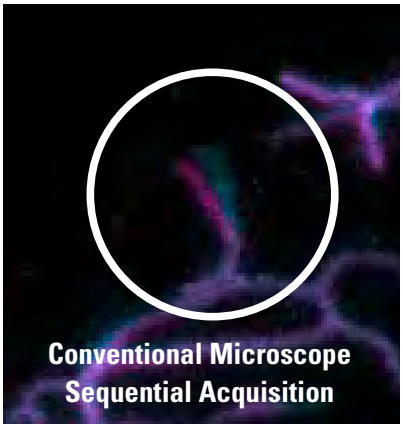
**Unified imaging modalities**

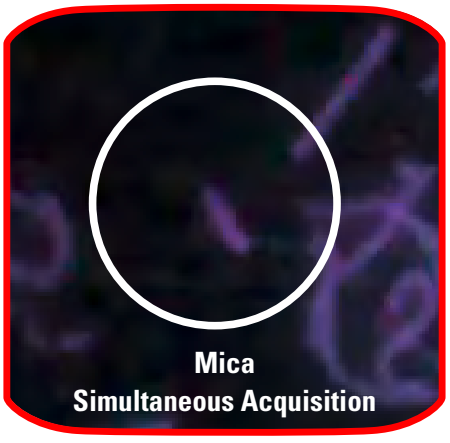
**Intelligent Automation**

**Intelligent Imaging**

# Step into the era of
# No constraints

The Microhub: everything you need to enable discoveries, unified in one easy-to-use system.
4x more data with 100% correlation. Access key contextual information with absolute spatiotemporal correlation.




U2OS cells stained with MitoTracker green (mitochondria structure, cyan) and TMRE (active mitochondria, magenta). Sequential acquisition (left side, conventional microscope) and simultaneous acquisition (right side, Mica) of the two channels over 2 minutes 100 frames using the 63x/1.20 CS2 Water MotCORR objective.

Absolute correlation thanks to FluoSync. A fast and gentle method for multicolor fluorescence imaging.

FluoSync is the way we have adapted for Mica a published method by Cutrale et al., that simultaneously detects 4 colors without having to worry about cross-talk or having to apply complex mathematical methods to separate the fluorescent signals.

Download the Whitepaper on FluoSync

Powered by

**4 labels simultaneously**

**4 labels 100% correlated**

**Patented FluoSync technology**

## Select the right modality in real-time. Seamlessly move from fast overview to high resolution.

**Create Overview**

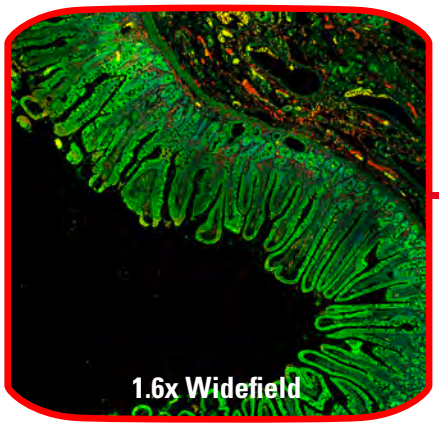
Find the sample structure on the carrier and observe the overall morphology of the colon slice. Identify a region of interest for more detailed inspection.

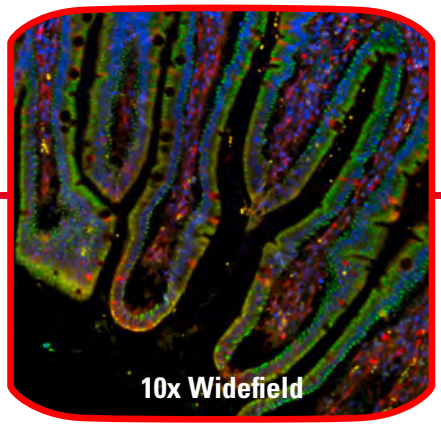
**Get more details of a substructure**

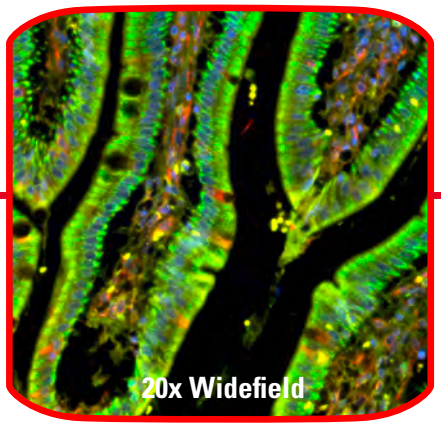
Switching to the next higher magnification allows to assess the integrity of the tissue and locate areas suitable for further analysis.

**Select the cell of interest**

Start to see the higher details and select the single cell to get subcellular information. However, some details remain hidden in the haze.




Intestine tissue section acquired with different objectives ranging from low to high magnification (1.6x, 10x, 20x, 63x), using widefield and confocal imaging.

# Step into the era of
# Radically simplified workflows

Bringing you faster from sample to discovery.
Reduce over 60% of process steps through system intelligence.

Reduce time and effort from sample to insight by simplifying your entire workflow.

Enable 100% reproducibility and repeatability throughout your experiment.

AI based training of mitochondrial segmentation using your scientific expertise

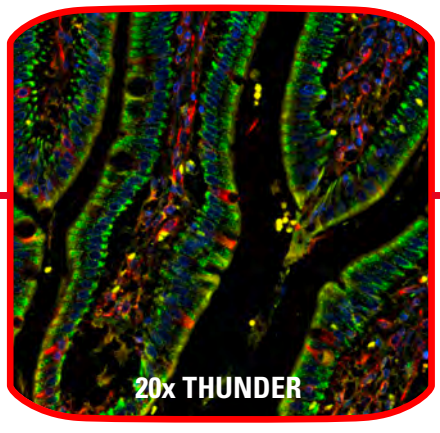
**Pixel classifier**

**GUI operated annotations**

**Reusable AI models and projects parameters**

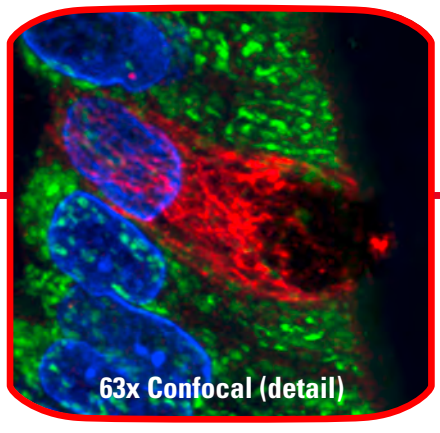
**Select the cell of interest**

THUNDER is the method of choice to get more contrast and see more details. This enables you to make the right selection and step further into the details of the sample.



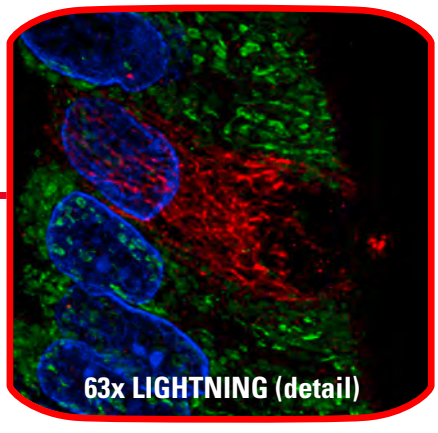

**Get the subcellular information**

Switch from Widefield to Confocal mode with just a simple click to get more subcellular information.




**Get even more of the subcellular information**

Adding LIGHTNING gives access to higher details of the subcellular structures seamlessly integrated into the whole workflow from fast overview to high resolution.




20x widefield images are processed with THUNDER and 63x confocal images with LIGHTNING. Nuclei are labeled in blue, mitochondria in green, and detyrosinated tubulin in red.

# SPECIFICATIONS

| | | | Mica Widefield | Mica Widefield Live Cell | Mica WideFocal | Mica WideFocal Live Cell |
|---|---|---|---|---|---|---|
| **TRANSMITTED LIGHT CONTRAST** | Integrated modulation contrast (IMC), automatically adjusted and brightfield contrast in RGB or gray scale mode | | x | x | x | x |
| **INCIDENT FLUORESCENCE ILLUMINATION** | LED | 365 nm, 470 nm, 555 nm, 625 nm | x | x | x | x |
| **FluoSync WIDEFIELD DETECTION** | Simultaneous detection channels | 4 with FluoSync fluorophore separation | x | x | x | x |
| | Detector type | 5 MP CMOS | x | x | x | x |
| **CONFOCAL ILLUMINATION** | Laser diode | 405 nm, 488 nm, 561 nm, 638 nm | | | x | x |
| **FluoSync CONFOCAL DETECTION** | Detector type | HyD FS | | | x | x |
| | Simultaneous detection channels | 4 with FluoSync fluorophore separation | | | x | x |
| **Environmental Control** | Live Cell Package | Temp. (to 45 °C), $CO_2$ (0 - 10 %), humidity | | x | | x |
| **IMMERSION DISPENSION** | Closed loop water dispenser. Water immersion for one objective is feedback controlled and does not require any interaction | | | x | | x |
| **THUNDER** | Methods | ICC, SVCC, LVCC | x | x | x | x |
| **LIGHTNING** | Methods | Basic, upgradeable to LIGHTNING Expert | x | x | x | x |

MEET MICA

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