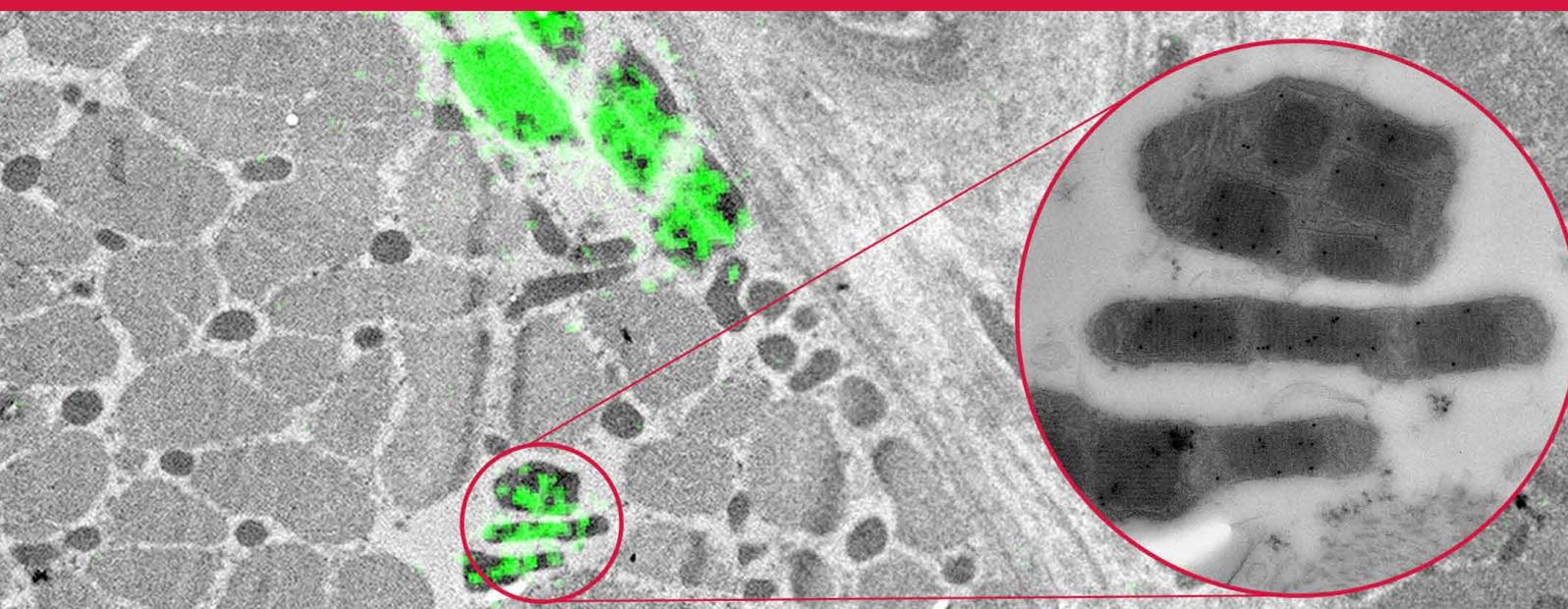




# Discovering Living Insight

Breaking frontiers in correlative light and electron microscopy



Explore. Discover. Resolve.



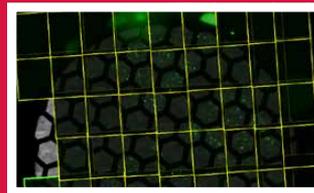
# Discovering Correlative Microscopy

Do your discoveries require a complete view of biological systems? Where could your research take you if combining light and electron microscopy techniques was made simple?

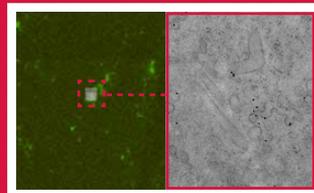
Correlative microscopy presents challenges that FEI is addressing with new technologies and developments that allow biological researchers to conduct correlative microscopy experiments that are fast, accurate and easy.

Our dedicated solutions are significantly improving success in completing multiple types of correlative experiments by addressing the challenges with sample fixation, preparation, imaging and correlation in different workflows.

- **Faster electron microscopy imaging**—navigate faster to your region of interest, reducing time-to-data.



- **Added perspective to high-resolution images**—understand the function of individual cells in the multicellular or tissue context.



- **Add ultrastructural context to live cell information**—put dynamic live cell imaging experiments into the context of high-resolution structural imaging.



# Which FEI solution is right for you?

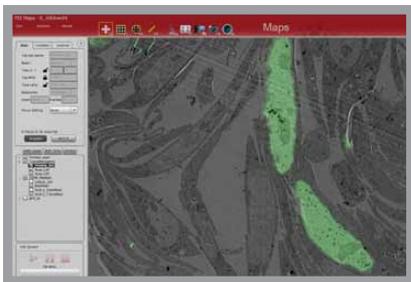
Correlative microscopy allows you to use light microscopy information to identify areas of biological importance within your sample—so you can apply electron microscopy to resolve ultra-structural details within those areas. There are three correlative solutions from FEI. Which one is right for you?



## CorrSight™

**Need a dedicated platform for optimized live cell imaging and sample fixation for correlative light and electron microscopy applications?**

FEI's CorrSight is a configurable platform designed to improve the speed and results in correlative light and electron microscopy applications. From impressive live cell imaging to flexible sample fixation methods—this dedicated correlative solution streamlines and improves your experiments. **Page 6**



## MAPS

**Already have a light microscope and need a rapid solution to capture high resolution data and correlate precisely?**

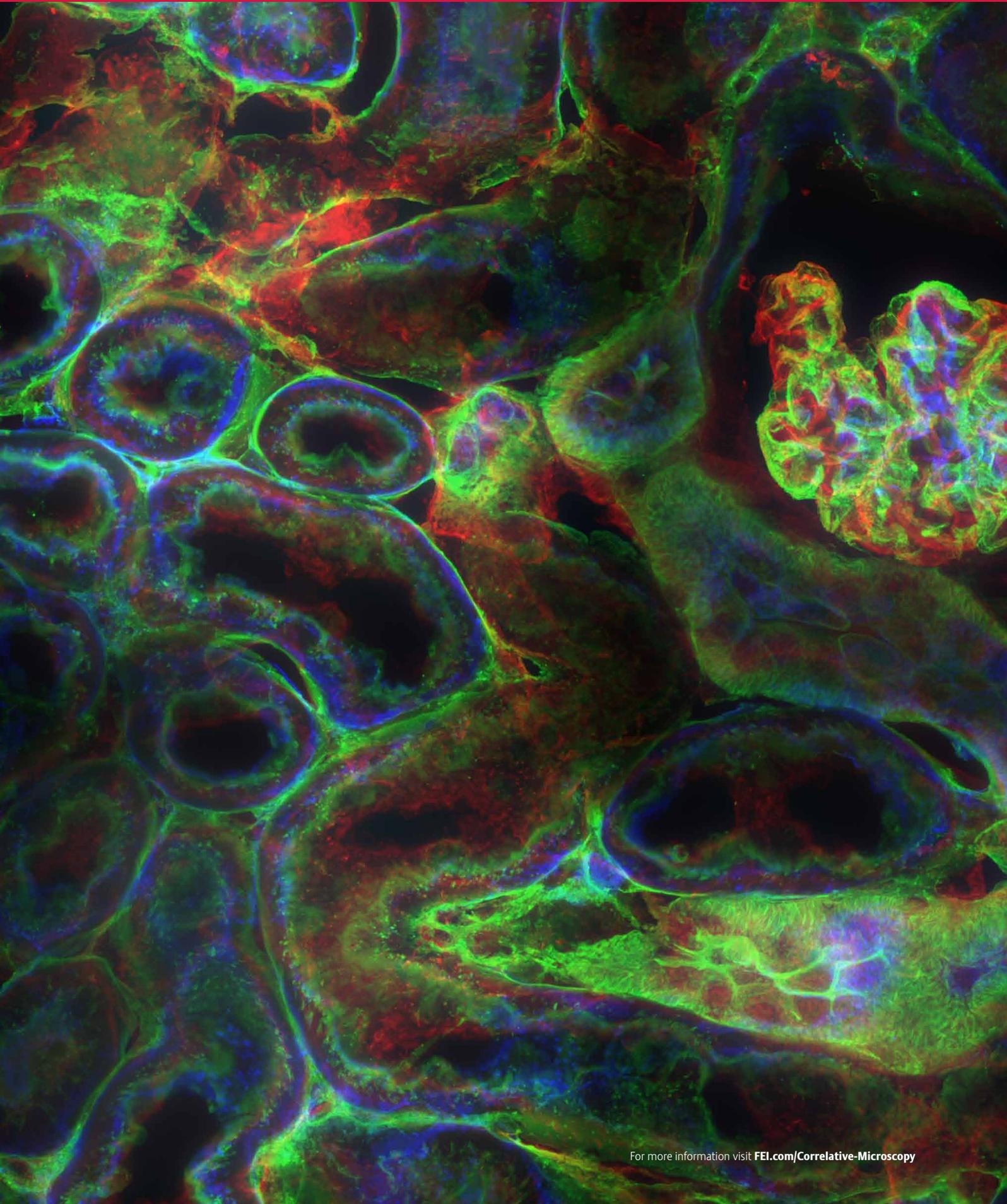
Let FEI's new powerful software, MAPS correlate both light microscopy data, and high resolution electron microscopy data with easy point-and-click functionality. Using this software and one of FEI's scanning electron or DualBeam™ microscopes you get a reliable, reproducible correlative solution—independent of sample preparation influences. **Page 8**



## iCorr™

**Comfortable with electron microscopy and want fast, precise correlation in one instrument?**

FEI's iCorr is a fluorescence light microscope module that is integrated with an electron microscope creating a single, harmonized instrument for faster throughput, reduced time-to-data and greater efficiency with the least amount of sample handling. **Page 10**



# Your workflow with CorrSight™

CorrSight is much more than a powerful light microscope. Created to bring simplicity and efficiency to your correlative microscopy workflow, it optimizes the environment for high quality sample fixation and live cell imaging, and delivers a smooth transition of both sample and data to your electron microscope.

## Event-centered microscopy

CorrSight helps you to optimize live cell imaging and sample fixation of the workflow. The powerful light microscope and sample environments allow you to benefit from event-based sample fixation resulting in higher success rates in correlative microscopy experiments.

## Fast, reliable correlation

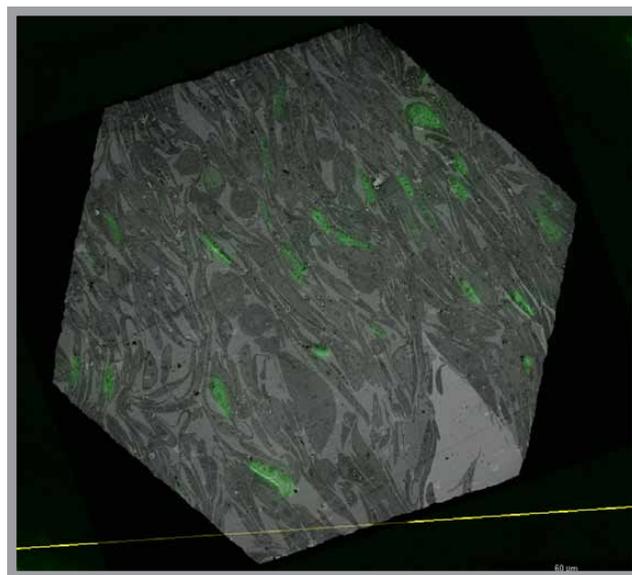
CorrSight makes correlating precise events easy with inherent and user-defined features powered by MAPS software to deliver simple or semi-automatic correlation, ensuring a smooth transition to the next imaging step.

## MAPS integration

CorrSight is integrated perfectly with FEI's powerful MAPS software. This allows you to correlate images from CorrSight with electron microscopy images from one of FEI's scanning electron or DualBeam microscopes, providing you with intuitive data organization and smooth, reliable correlation making your experiments as efficient and insightful as possible.

## Created to optimize the Correlative Workflow

CorrSight has a large sample stage that allows you to use different sample formats and environments at each step of your workflow. You can scan large sample areas or multiple samples in one go with the powerful light microscope. The system is easily scaled to your application—from a widefield system up to spinning disk confocal for high speed imaging of living specimens. Automation through MAPS software speeds up throughput, giving you significant time reduction to information and more precise correlation.



Screen capture of a grid section generated by MAPS software showing a fluorescent light microscopy image and a low magnification electron microscopy image correlated precisely.

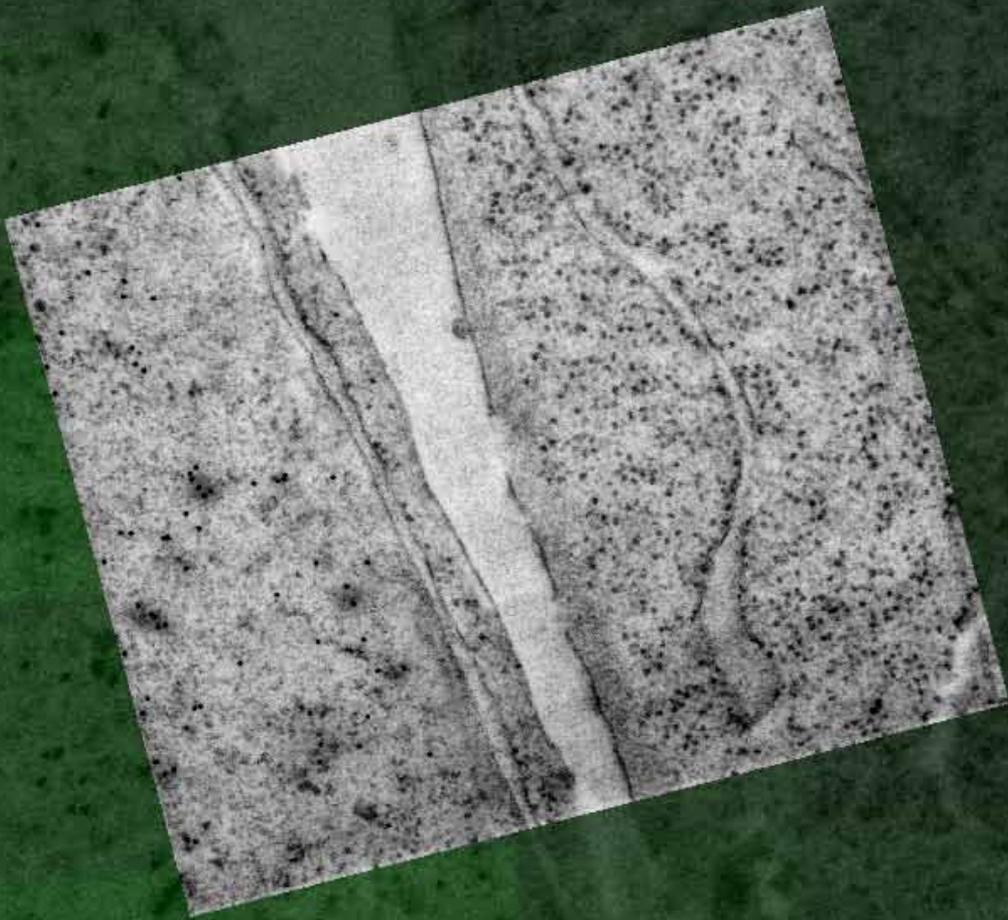


Image overlays generated by MAPS software show fluorescent signal (green) and both high and low resolution electron microscopy images overlaid with precise correlation.

## How CorrSight makes correlative experiments easier

### Creating optimal conditions

CorrSight creates optimal conditions for live cell imaging through available modules for different imaging modes and sample fixation methods to give you an ideal solution for your correlative application needs.

### Combining insights

When you have prepared your sample appropriately, image it easily with both the powerful light microscope on CorrSight and one of FEI's scanning electron or DualBeam microscopes using a single compatible sample holder. Optimizing the transfer between two modalities and ensuring experiment success.

### Flexibility across applications

CorrSight is uniquely equipped with a variety of sample environments to support a wide range of sample fixation techniques for correlative microscopy applications. Even cryogenic based experiments are easily supported.

# Navigating discovery with MAPS

MAPS is Modular Automated Processing System software, and it is the optimal solution for researchers who already have a light microscope and need a solution to capture high resolution data and correlate precisely. MAPS delivers fast, accurate correlated images that deliver maximum insight.

## Compatible with all light microscopes

MAPS software uses only image data to correlate and is compatible with any light microscope. Features in your light microscopy images are used as a basis for correlation—including fiducials and cellular structures.

## Integrated data

Use MAPS to import data from your light microscope and seamlessly acquire electron microscope data using one of FEI's scanning electron or DualBeam™ microscopes within the same area. MAPS meets your research needs by handling large samples and multi-scale datasets with ease.

## Insight without boundaries

MAPS allows you to combine light microscopy images at different magnifications with electron microscope images acquired using different detectors and at different resolutions.

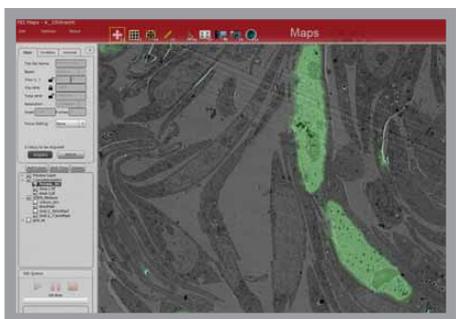
You can even report on different properties like chemical composition, ensuring you can create a complete picture of sample characteristics at different scales—without ever losing the context of your whole sample.

## MAPS creates a single harmonized system for correlative microscopy

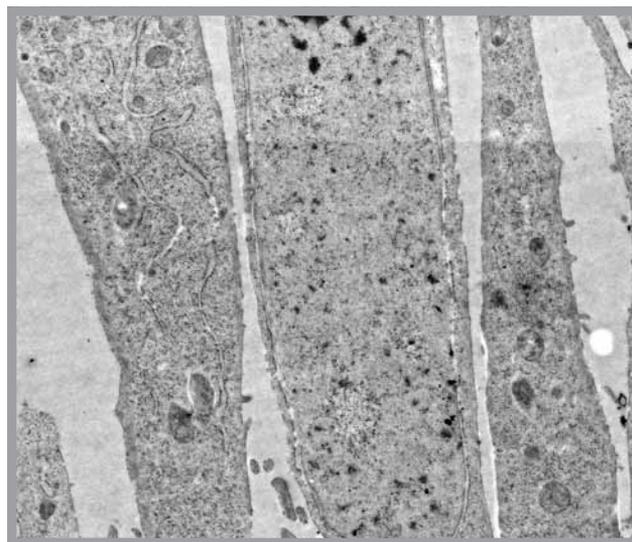
Gain new insight with your light microscope by using MAPS to import your data into an FEI scanning electron or DualBeam microscope to effectively join two modalities with point and click ease. Capture high resolution information, and preserve precise context of your area of interest.

## Improve the quality of your light microscopy data.

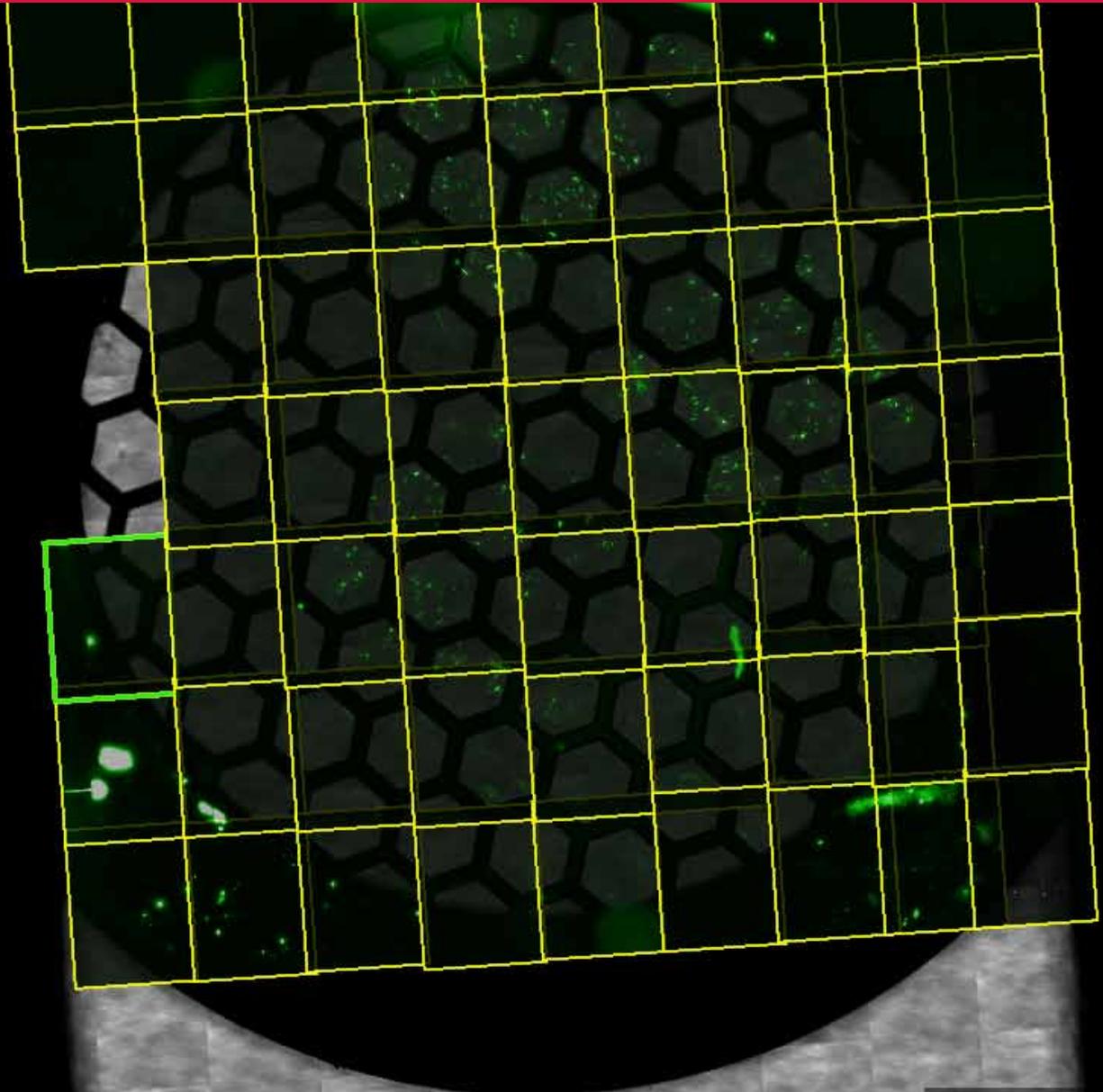
Visit [FEI.com/light-microscopy](http://FEI.com/light-microscopy) and learn about our suite of premium digital light microscopes for your correlative applications.



Screen shot of MAPS software interface showing fluorescence signal with low magnification electron microscopy data.



High resolution electron microscopy data captured automatically from selecting an area of interest on your light microscopy image. MAPS software automatically captures high resolution images that you choose with a simple point and click.



MAPS grid overview in an SEM, displaying light microscopy (LM) fluorescence signal from cells and the electron microscopy (EM) grid. Imaging sections outlined in yellow are where the SEM or Dualbeam will capture electron microscopy images to eventually display full EM and LM data in correlation.

## How MAPS software works for correlative microscopy

### Creating an overview

Import your light microscope image and sample into an FEI scanning electron or DualBeam microscope. MAPS creates a low magnification overview image with electron microscopy data. This gives you a large overview with both EM and LM data shown in correlation.

### Extending insight

Once you have your correlative overview, researchers can easily select specific points of interest on that overview to create a sequence for automated capture of high resolution images.

### Reveal high resolution data

Based on the user selected points of interest on the overview, MAPS software automatically captures high resolution data on those points and overlays the images in context of your sample. Giving you precise correlation without the manual work.

# Efficient discovery with iCorr™

iCorr is a fluorescence light microscope module that can be integrated on FEI's powerful Tecnai™ transmission electron microscopes. This combination of technologies brings light and electron microscopy to one single, harmonized instrument.

## Correlative analysis on more samples, faster

With iCorr, researchers capture both light microscopy and electron microscopy data in one instrument. Easily locating points of interest and capturing high resolution data that is automatically correlated in the click of a button. This delivers high quality data and precise correlation in minutes rather than hours or even days.

## Preserving sample integrity

With iCorr, researchers conduct light and electron microscopy on one instrument, removing the need to transfer samples. This reduction in sample handling preserves the integrity of your sample allowing for more data to be captured and increases the success rate of correlative light and electron microscopy experiments.

## Integration and retrofitting

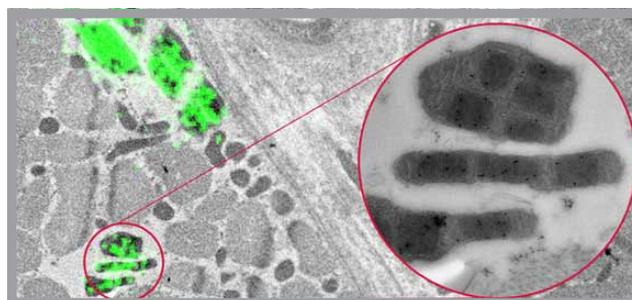
iCorr is available to biological researchers in two ways; as an integrated component on a new FEI Tecnai transmission electron microscope, or as a retrofitted module on already installed Tecnai platforms.

**iCorr is available on the following Tecnai models:**

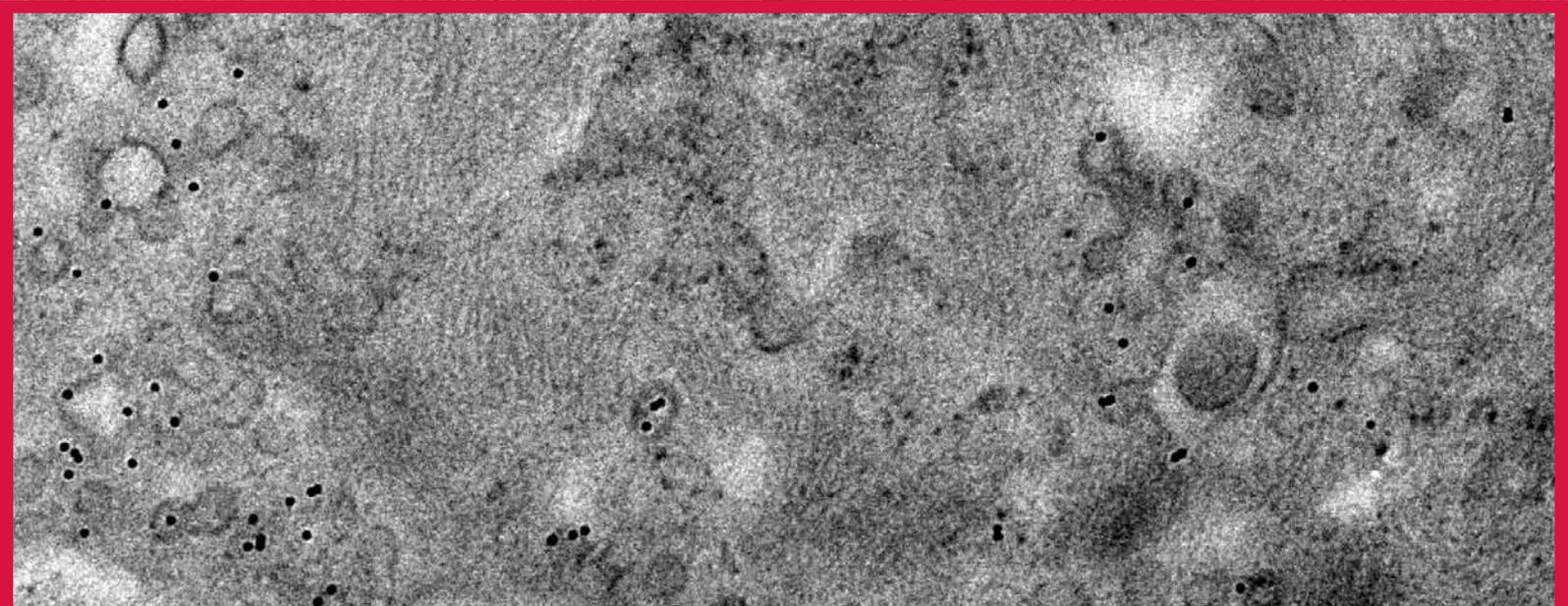
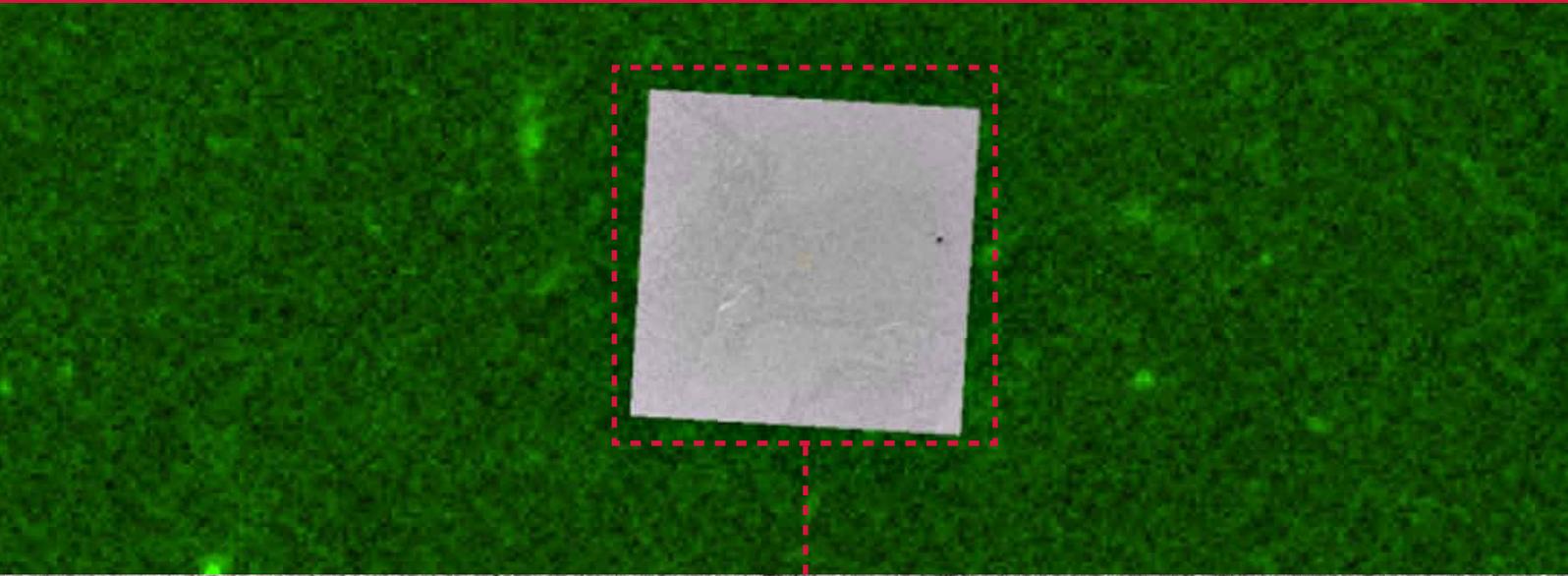
- Tecnai G<sup>2</sup> Spirit BioTWIN and TWIN
- Tecnai 12
- Tecnai G<sup>2</sup> 20 TWIN
- Tecnai G<sup>2</sup> F20 TWIN



Tecnai G<sup>2</sup> Spirit



Capture both light microscopy and electron microscopy data in one instrument



**Top:** Fluorescence image showing low resolution signal, with an overview of the high resolution images captured and overlaid with precise correlation.

**Bottom:** High resolution electron microscopy data from the region of interest above.

## A correlative workflow with a single instrument

### Capturing light microscopy data

A single sample stage is automatically tilted towards the iCorr module to capture light microscopy data. iCorr creates a large overview of a biological specimen with fluorescence or reflected light. This overview is then used for easy navigation to points of interest for higher resolution imaging.

### Adding TEM imaging

Using the fluorescence overview, researchers can easily select multiple points of interest and create a sequence of automated image captures to reveal high resolution data. The single sample stage is tilted from the iCorr module to the electron beam at a single click when higher resolution imaging is conducted.

### Precise correlation automatically

Once points of interest on the fluorescence overview are selected, electron microscopy images are captured and automatically overlaid in precise context to reveal ultra-structural detail quickly. This combination of automated technology delivers correlated results that are easy, fast and accurate.

## About FEI Company

With more than 60 years of microscopy innovation and leadership, FEI provides the widest range of electron, ion, and digital light microscopy instrument, workflow, and application expertise in the industry. FEI solutions help customers worldwide answer questions, make breakthrough discoveries, accelerate time to market, and achieve competitive advantage. Rich problem-solving experience from across the electronics, life sciences, materials science, and natural resources markets enables FEI to bring fresh perspectives to customers' challenges, whether small and simple or large and complex. FEI people and solutions drive research, propel progress, and ultimately help change the world.

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BR0047 10-2012



TÜV Certification for design, manufacture, installation, and support of focused ion- and electron-beam microscopes for the Electronics, Life Sciences, Research, and Natural Resources markets.