

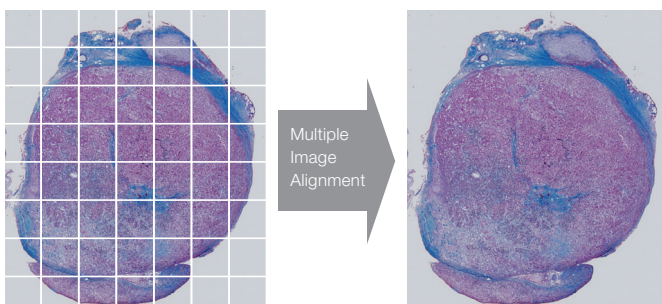
# Detail and Depth with Panoramic and Extended Focal Imaging

- **High resolution imaging of complete tissue sections**
- **Capture the entire depth of thick specimens**
- **Cost effective interactive solutions for manual microscopes**
- **Efficient, fully automated solutions for motorized systems**



### Panoramic Imaging – Discover the Detail without Losing the Big Picture

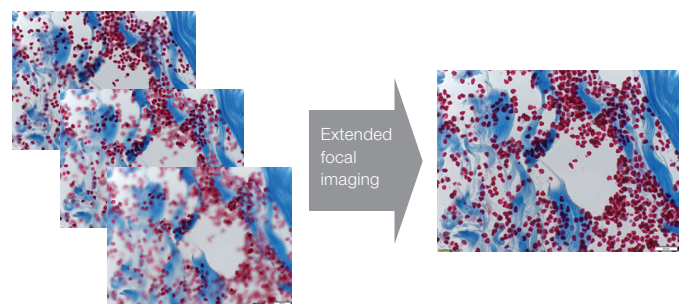
Seamless, clear wide area images of whole tissue sections can be created by the cellSens Multi Image Alignment Algorithm (MIA). A montage is generated from multiple images acquired in high magnification and corrected for small mismatches, allowing the user to visualize the entirety of a tissue section. With cellSens, panoramic imaging can either be done manually by moving the stage or in a fully automated way using a motorized microscope.



Principle of panoramic imaging

### Extended Focal Imaging – Entire Depth of Specimen in One Image

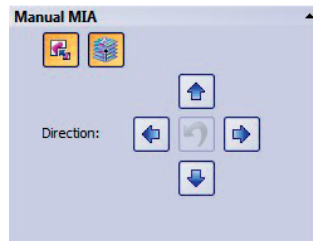
When imaging thick samples the small depth of field inherent to microscope optics does not allow the visualization of all structures of the specimen at a single focal position. This is especially pronounced when using high magnifications. The cellSens Extended Focal Imaging (EFI) allows users to extract the in focus information from different focal planes and combines it in one full focus EFI image, eliminating the need to focus up and down through the sample with the eyepieces.



Principle of Extended focal imaging

## Manual MIA – Interactive Panoramic Imaging

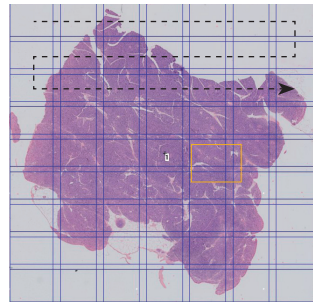
Even with a basic manual microscope panoramic images can be created. The manual MIA function offers an intuitive and interactive way of creating panoramic images by moving the microscope stage by hand. Manual MIA can even be combined with extended focal imaging to create full focus images of a complete tissue section.



Manual MIA

## Automated MIA – Panoramic Imaging

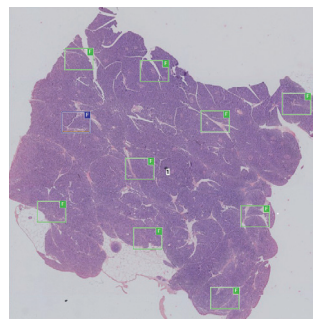
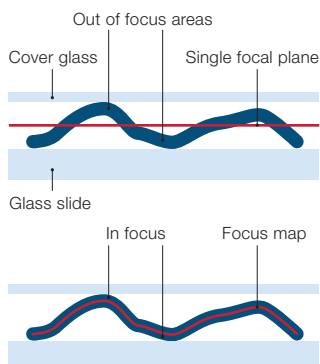
The most efficient and convenient way to image large area tissue sections is using a motorized microscope and the automated MIA function of cellSens. Users simply need to define the imaging area by drawing a frame in the overview image, choose the magnification and start the process. The system will then automatically acquire the individual tiles and combine them seamlessly to create a high resolution image of the complete specimen.



Automated MIA

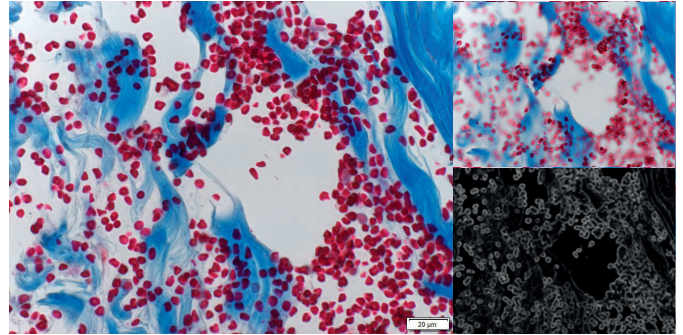
## Focus Map

Often the tissue section is not completely even and might be folded. In these cases imaging large sections in a single focal plane will result in out of focus areas, so to overcome this effect, the automated MIA features a focus map. Several focus positions are acquired across the whole area of the sample, either by focusing manually or automatically using the autofocus. From these points a focus map is generated, which is used during acquisition to follow the topography of the sample and to create an in focus image of the whole section.



## Instant EFI

Instant EFI is an easy and intuitive way to create full focus images of thick specimens using a manual microscope. It requires nothing more than starting the process and slowly focusing up and down through the sample. The instant EFI will extract in focus information on the fly and successively construct the full focus image, giving direct feedback to the user by showing the live image (top right), extracted in focus information (bottom right) and the resulting EFI image (left).



## Automated EFI and Virtual Focus

EFI can be conveniently automated with a motorized microscope. Users just need to define the limits of acquisition and the system will acquire a series of images at different focal positions. After acquisition the resulting Z-stack is either combined to a single EFI image or the Z-stack data and the height information is kept. The original Z-stack data allows users to virtually focus through the sample by browsing the individual images of the stack, providing the same information as looking at the actual sample through the eyepieces.

	cellSens Standard	cellSens Dimension
Manual MIA	Manual Process Control	•
Instant EFI	Manual Process Control	•
Combined Manual MIA and Instant EFI	Manual Process Control	•
Automated MIA	-	Multiposition
Automated EFI	-	•
Combined Automated MIA and EFI	-	Multiposition
Virtual Focus	-	•
Combined Automated MIA and Virtual Focus	-	Multiposition
Focus Map	-	Multiposition
Autofocus	-	•



For more information, please visit  
<http://www.olympus-lifescience.com/cellsens>

- OLYMPUS CORPORATION is ISO9001/ISO14001 certified.
- Illumination devices for microscope have suggested lifetimes. Periodic inspection is required. Please visit our website for details.
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- Images on the PC monitors are simulated.
- Specifications and appearances are subject to change without any notice or obligation on the part of the manufacturer.

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