



Fluorescence Microscopy

Acquirer IM

Automated Widefield Microscopy

Acquifer IM

Next-Generation Imaging and High-Content Screening

Bruker's Acquifer Imaging Machine (IM) is a fully automated widefield microscope with brightfield and fluorescence imaging for a variety of samples. Incorporating comprehensive data storage and processing capabilities, it is an ideal platform for high-content screening assays and phenotypic screening for small-model organisms.

The combination of a static sample holder and a mobile optical unit ensures sample stability during imaging, making it ideal for imaging motion-sensitive samples, such as non-adherent cell cultures or embryos. The IM system includes a host of unique features, including built-in temperature regulation, a robotic lid, and an open interface. Seamless integration into automated workflows make it easy for researchers to perform advanced, long time-lapse experiments, screening, and high-throughput imaging assays.

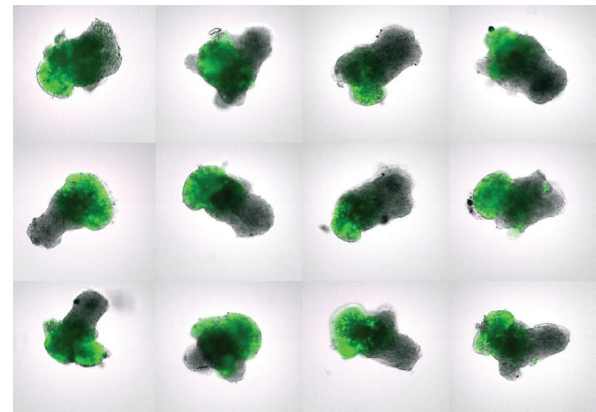
Only Acquifer IM provides:

Intuitive Design and Use

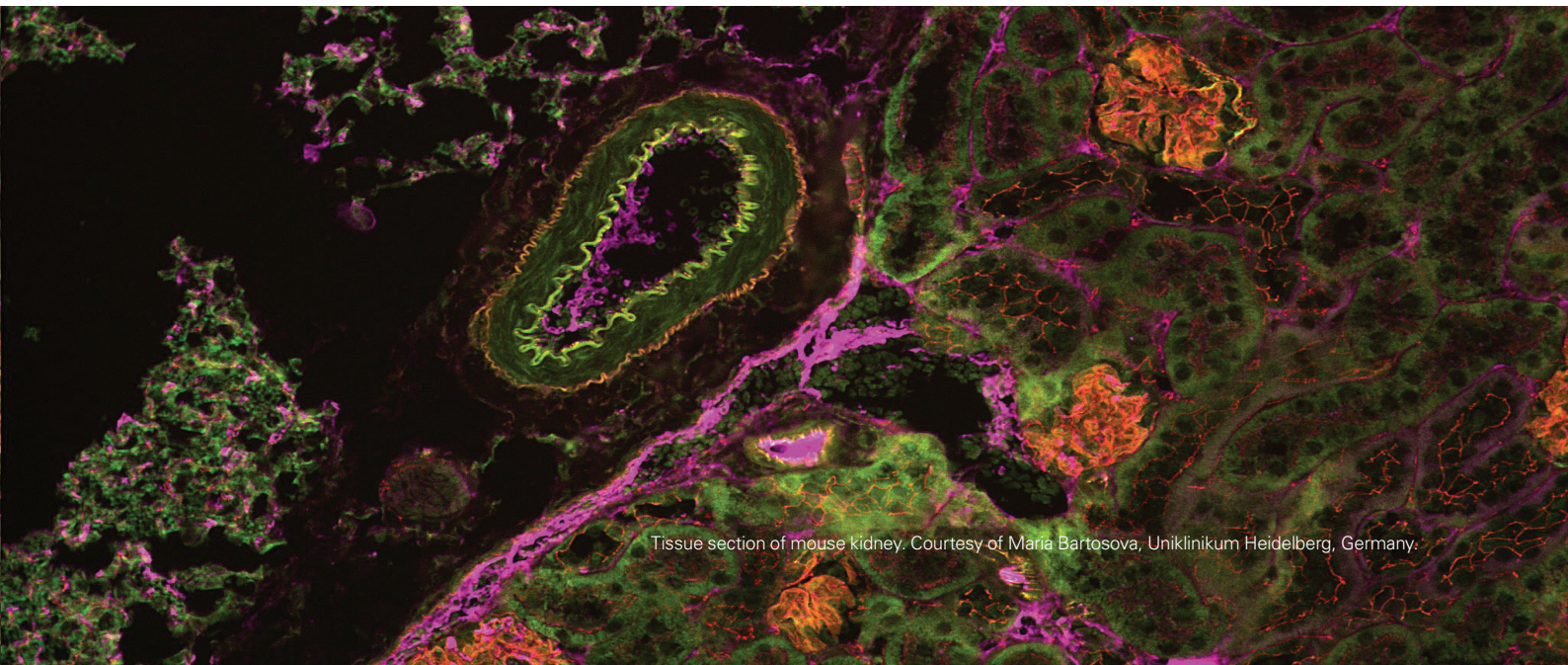
- Adaptive feedback microscopy
- Software and workflow for visualizing large screening datasets and imaging of automatically centered samples
- Effortless configuration of imaging experiments

Sample-Centered Approach

- Optimal imaging conditions for sensitive specimens and long-term observations
- Uniblock optical design moves to your sample while your sample remains stationary
- Built-in temperature control (20 to 40°C) with $\pm 0.5^\circ\text{C}$ homogeneity over whole plate and over time



Organoid imaging: Fish-derived organoids differentiating into retinal tissue (green). Courtesy of Venera Weinhardt. Zilova et al., 2021. Image reproduced under CC BY 4.0 DEED.



Tissue section of mouse kidney. Courtesy of Maria Bartosova, Uniklinikum Heidelberg, Germany.

Optimized Control for Fragile Samples

Unparalleled Live-Sample Imaging

For precise live-sample imaging, the sample chamber temperature is tightly controlled. The temperature mechanisms are designed for long-term stability and to minimize gradients across the plate.

Versatile Application

The versatile and easy-to-use machine control and assay configuration cater to a broad spectrum of specimens, including whole organisms, microorganisms, cell monolayers, stem cells, organoids, spheroids, and tissues.

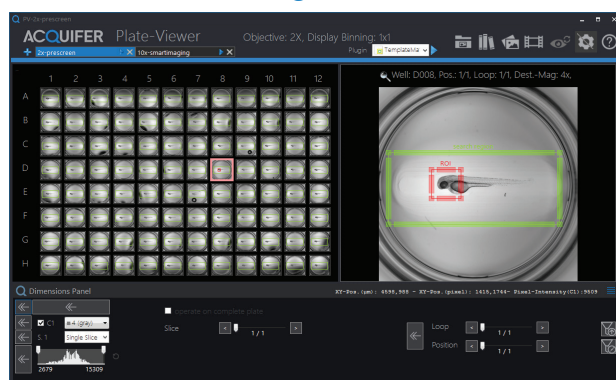
Supervised Feedback Microscopy

Low-magnification pre-screen data of a full microtiter plate can be readily visualized in the Plate-Viewer software. Different tools and matching algorithms enable the selection of regions of interest for each well and robust localization of target structures.

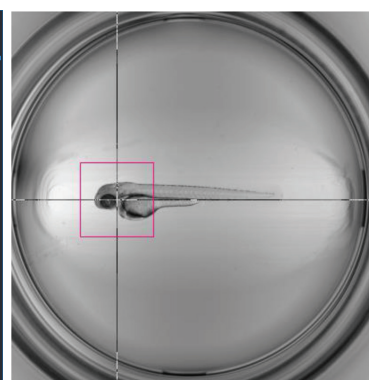
Add-On Photomanipulation

This optional hardware upgrade enables automated photodamaging of cells and tissues, switching of convertible fluorophores, uncaging compounds, and optogenetics experiments.

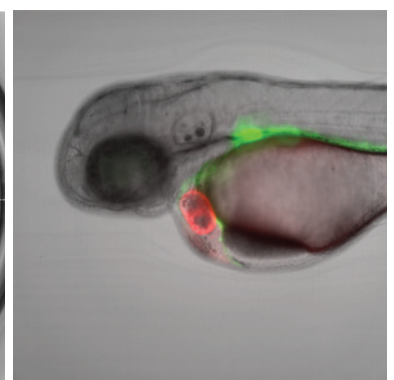
Automated Centering



Three-day-old embryo of the epi:GFP;myl7mR transgenic line. Zebrafish embryos visualized in Plate-Viewer software after automated region of interest selection.

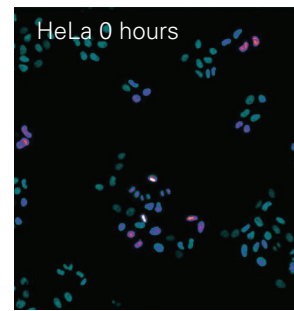


Red bounding box indicates field of view of a 10x objective used for subsequent high-resolution imaging.

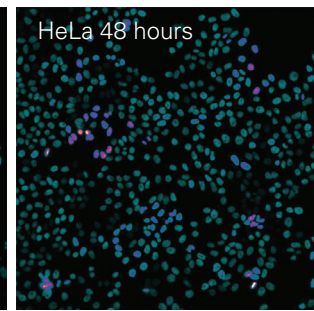


Single Z-plane of a high-resolution dataset automatically acquired by the IM. Courtesy of Nadia Mercader, Uni Bern.

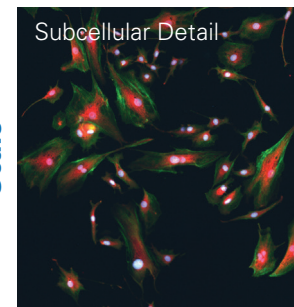
Time



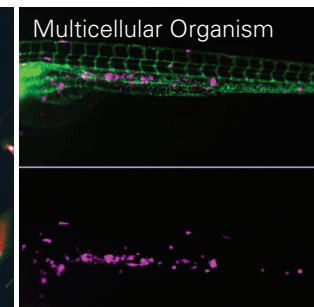
Automated timelapse microscopy: HeLa cells with H2B-mCherry imaged every 30 minutes for 48 hours. Courtesy of ALMF, EMBL.



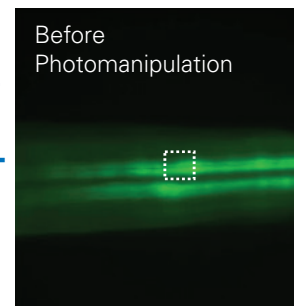
Scale



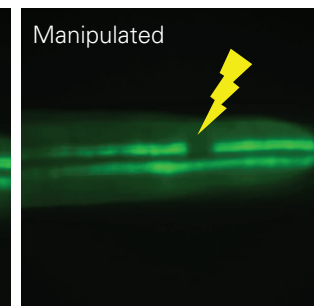
Screening workflows for various assay requirements: Cell culture (left) and a zebrafish xenograft assay (right). Courtesy of Arwin Groenewoud.



Manipulate



Automated photomanipulation: GFP-positive distal pronephros of a cdh17:egfp transgenic zebrafish with annotated region of interest (left) and after photodamaging (right).



The Acquirer IM Advantage

Advanced Control

- Workflow control tools provide automated centering and imaging of regions of interest
- Embedded real-time controller ensures lag free operation and optimized experiments
- Motorized lid enables robot-ready operation

Intuitive Imaging Protocols

- User-friendly software enables precise control of experiments
- Intuitive configuration of imaging protocols offers supervised feedback microscopy experiments
- Open developer interface features built-in scripting support and remote control via TCP/IP

Production-Engineered Hardware Design

- Friction-free linear motor technology provides maximum precision and reliability
- Precise X-Y optics movement delivers repeatability
- Precision Z-focus provides long range 30 mm Z-travel / 80 nm repeatability

Integrated Benchtop System Design

- No manual controls at the device prevent unwanted changes
- Bruker's Acquirer software provides users with full control of system
- Smooth finished design bypasses the need for a microscopy room

Customized Flexibility

- Long-working-distance objectives provide magnification from 2x to 40x
- LED illumination with up to 6 channels covers a range from 385 nm to 625 nm
- Temperature control (20 to 40°C) with $\pm 0.5^\circ\text{C}$ homogeneity over whole plate and over time

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Fluorescence Microscopy | See the Biology of Life More Clearly



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