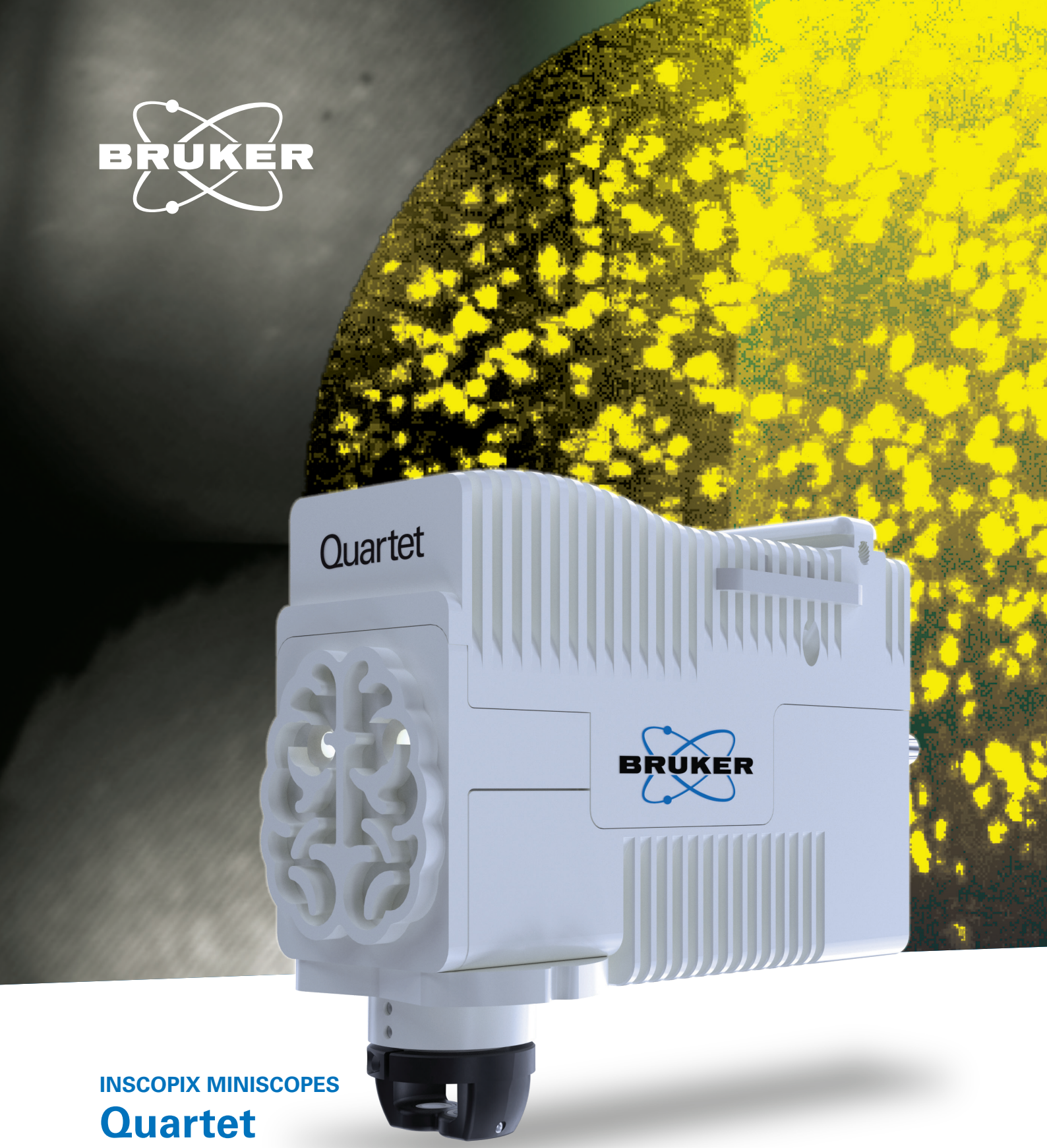


INSCOPIX MINISCOPES

Quartet

Multi-Site Imaging During Free Behavior

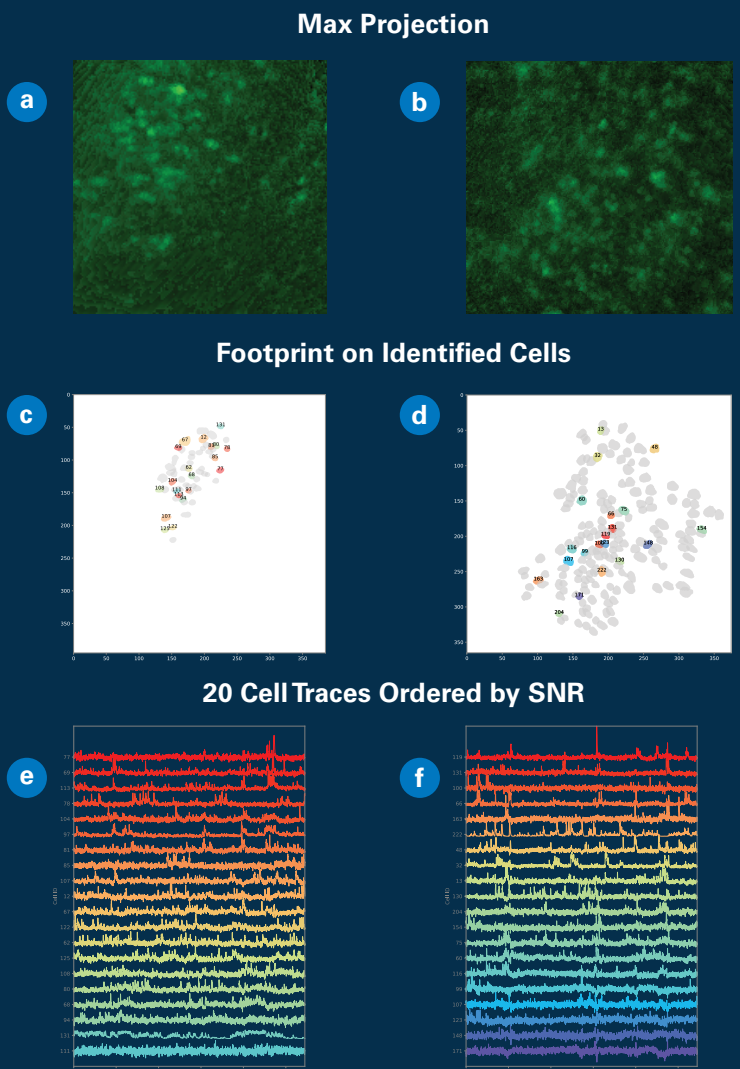
Quartet

Real Activity from Interdependent Brain Regions

The Quartet® multi-site miniscope offers cellular-resolution imaging while targeting multiple brain regions in freely behaving animals. Bruker has applied the ingenuity of Inscopix miniscopes into an optimized design and application workflow to investigate up to four fields of view in a single imaging session. Using ultralight, flexible, electronic-free fiber bundles, the system simultaneously monitors subtypes and subpopulations of neurons during naturalistic behavior to decode how the brain integrates information across brain regions.

Only Quartet provides:

- Four flexible, individually illuminated fibers to image at different depths or fluorophore expression
- Ultralight and compact fiber endings to image at an angle, and in hard-to-reach brain regions
- A unique design that broadens free-behavior research applications, such as neonates and the water maze

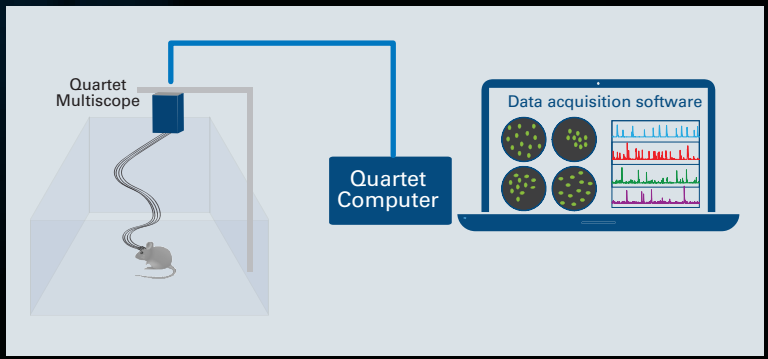


Representative field of view acquired with the Quartet system showing the maximum intensity projection image of: (a) the Anterior Cingulate Cortex; and (b) Hippocampus CA1. Using CNMF-e to extract cells from the image, users obtain the respective cell maps (**c-d**) and cell traces (**e-f**).

Complete Solution for Functional Insights

Increased Flexibility for Multi-Site Experiments

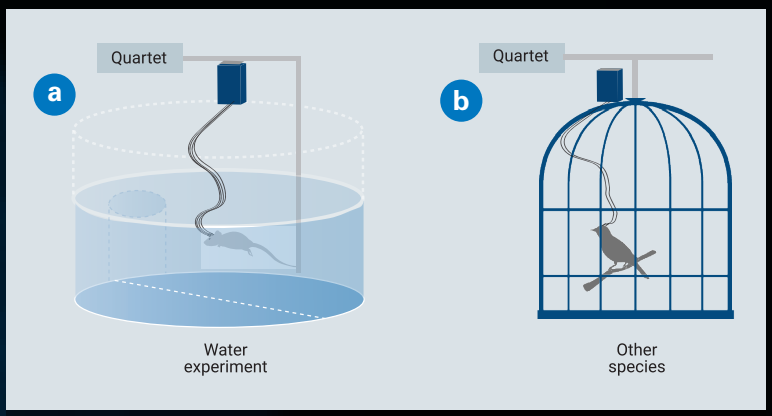
Quartet is a complete solution for multi-site imaging research. The system uses individual LEDs to illuminate each fiber and target brain regions with different depths and/or fluorescent marker concentrations. The system's software enables data acquisition, pre-processing, and manual annotation to allow real-time feedback on image quality and experimental success. With the addition of TTL signals, researchers can synchronize their behavioral environment with neuronal activity to better correlate the animal's action to brain signals.



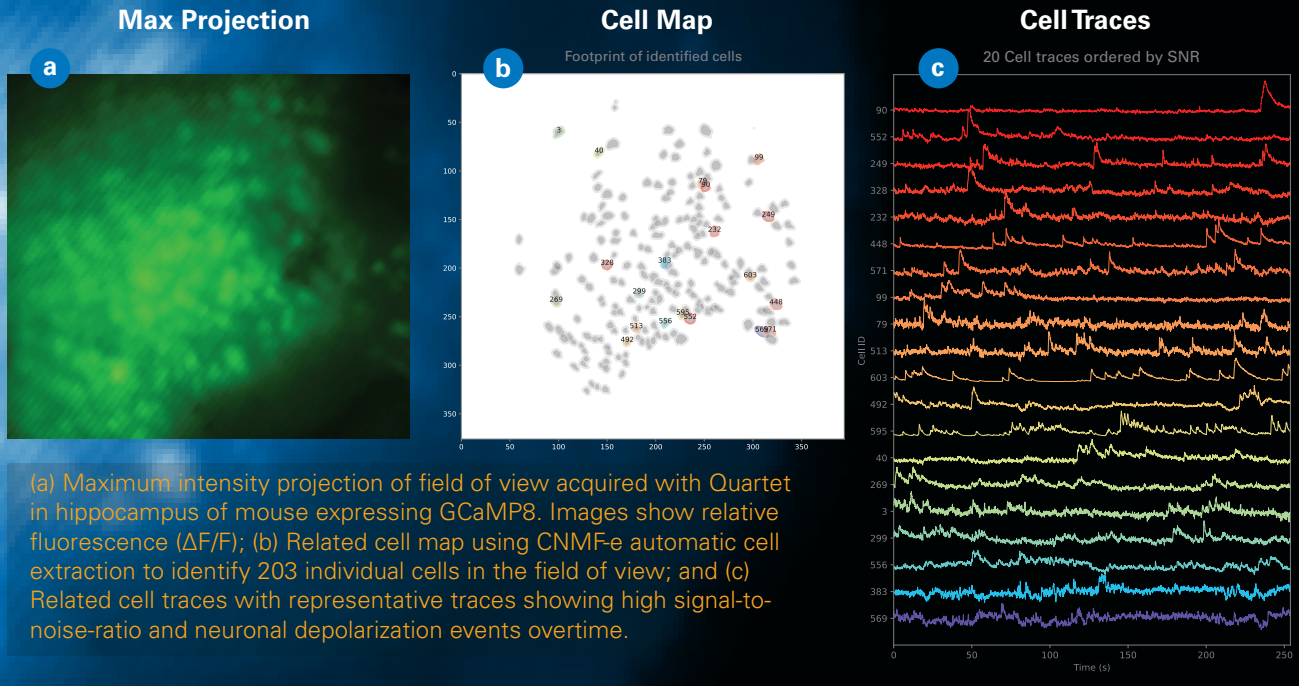
Imaging fibers transfer optical signals to and from the multi-site miniscope as the software enables live image processing

Specialized Neurobehavioral Applications

The imaging fiber bundles' design ensures adaptability across a spectrum of behavioral paradigms and animal models. The magnetic fiber connection and manual focus on the animal's head allow for water-based tests like the Morris maze. The compact connection footprint allows for imaging neighboring brain regions and angled implantation without additional neck strain. The perceived weight of the device, below 2 grams, is light enough that smaller animals like zebra finches and mouse pups can comfortably wear the system during experiments.



Diverse behavioral paradigms and animal models are now enabled with the Quartet system. a) Morris maze; and b) Multi-site zebra finch experiment



(a) Maximum intensity projection of field of view acquired with Quartet in hippocampus of mouse expressing GCaMP8. Images show relative fluorescence (ΔF/F); (b) Related cell map using CNMF-e automatic cell extraction to identify 203 individual cells in the field of view; and (c) Related cell traces with representative traces showing high signal-to-noise-ratio and neuronal depolarization events overtime.

Extensive Accessories and Software

Quartet is compatible with a range of surgical tools, such as Piccolo® and a variety of connected GRIN lenses whose lengths and diameters are selected to provide the best optical imaging access.

Quartet systems also include Inscopix Data Processing Software (IDPS), which is optimized for neuronal calcium imaging analysis and enables neuronal video-processing, ROI selection, and calcium trace extraction. The data collected can also be processed using the Inscopix Data Exploration, Analysis, and Sharing (IDEAS) platform to benefit from an extended suite of analysis tools

Unmatched Scientific Support

- **Quartet** users also benefit from full access to the renowned Inscopix Scientific Support, including:
- **iQ**: a self-paced online learning platform
- **Field Scientific Consultants**: expert scientists to provide surgical training and review experimental design
- **Technical Support**: system experts to help troubleshoot and resolve system issues

Quartet Specifications

Hardware
4 imaging probes
84 cm imaging fiber bundles
3 cm bending radius (for each fiber bundle)
<1.5 g fiber bundle (<1 g carried by animal)
0.5 to 1.0 mm FOV in each region
7 µm fibers, 18,000 individual fibers per bundle
3.2 MP per frame
20 fps in continuous mode
2 m camera electric wire
1.5 m LED wire
470±15 nm illumination wavelength
Spectral Characteristics
517±13 nm to 590±20 nm detection wavelength
1.2 mW illumination power at tissue

Bruker Fluorescence Microscopy

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Inscopix Miniscopes | See Brain Circuitry in Action

www.inscopix.com/Quartet