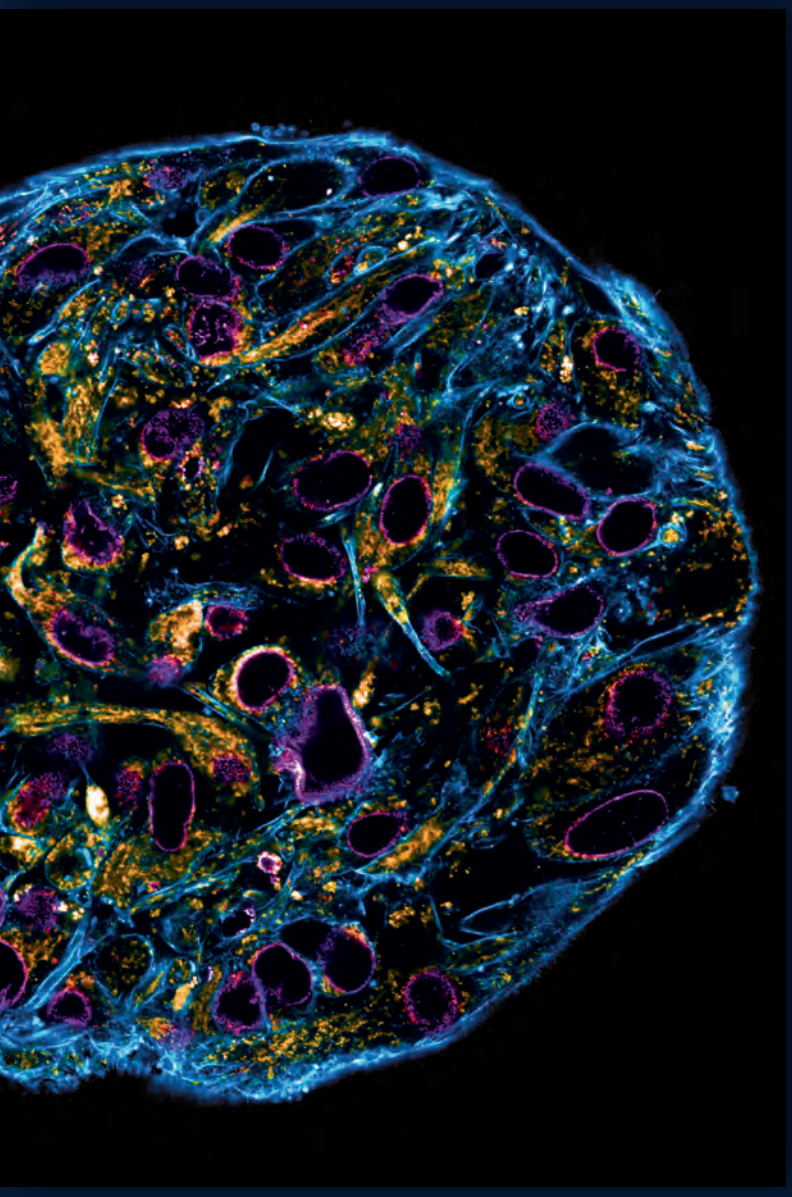
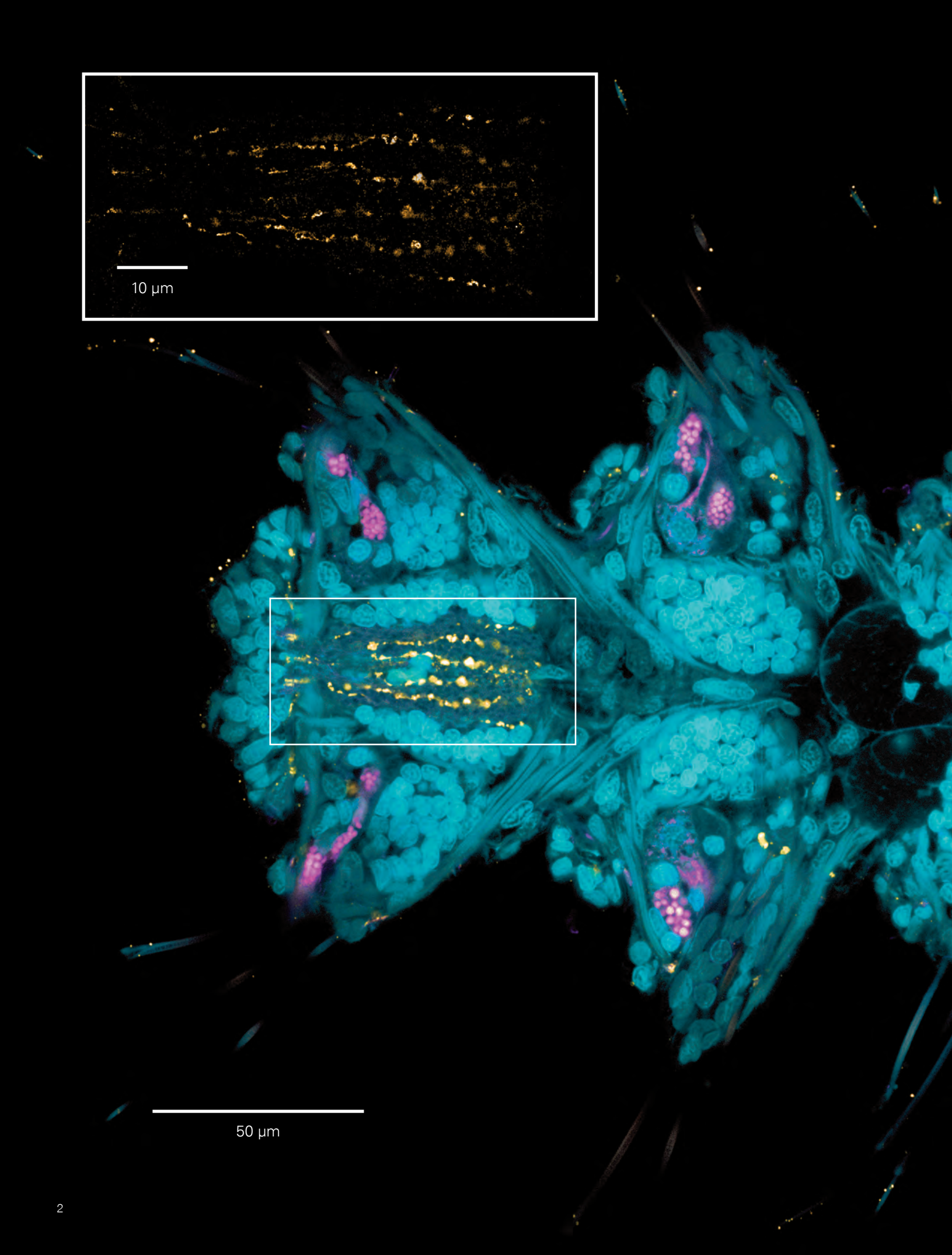


Abberior

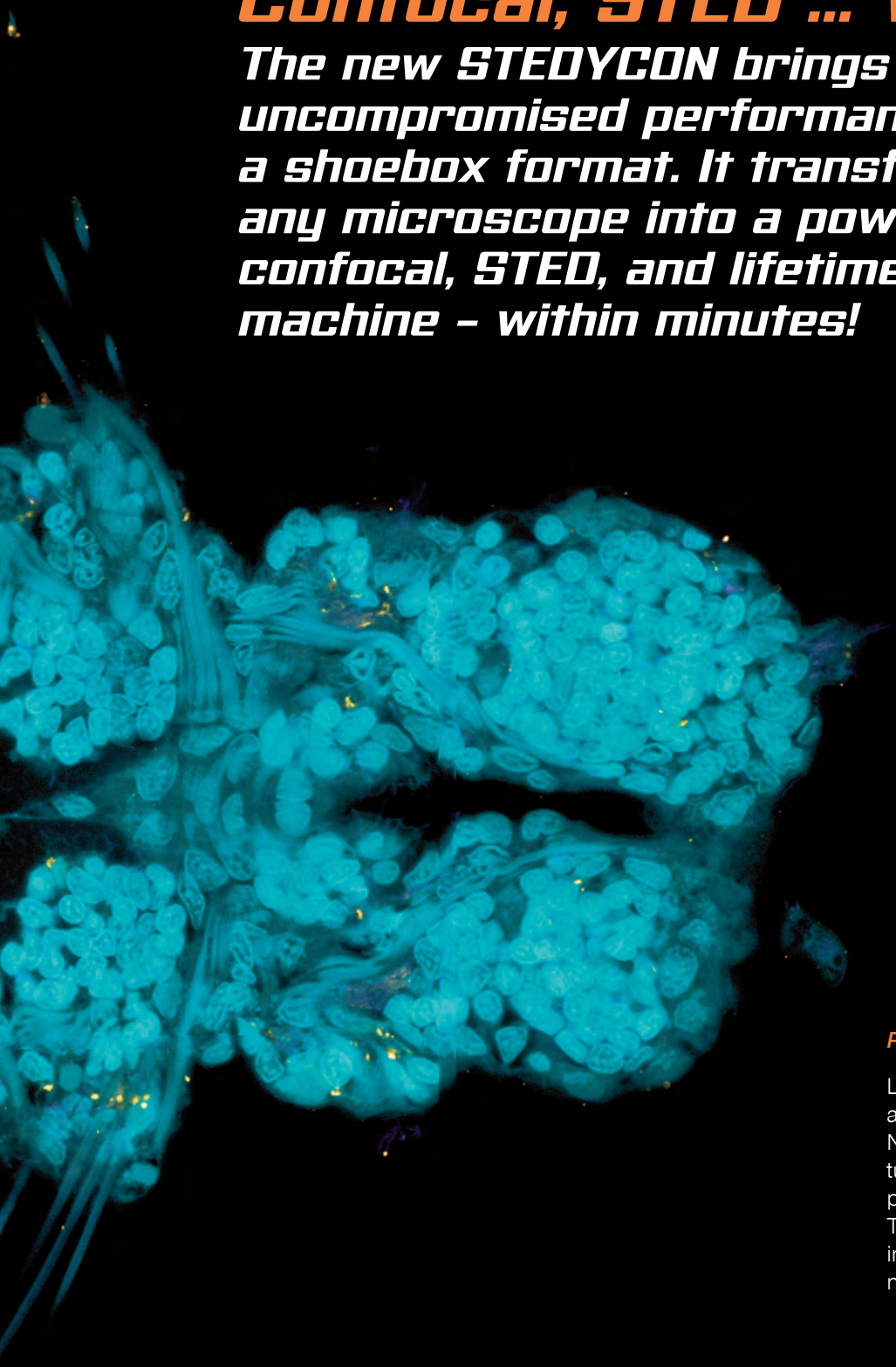
STEDYCON 2

High-end microscopy, simplified: confocal, superresolution, and lifetime imaging in one flexible system


10 µm
50 µm

Confocal, STED ... WOW!

The new STEDYCON brings you uncompromised performance in a shoebox format. It transforms any microscope into a powerful confocal, STED, and lifetime imaging machine – within minutes!



***Platynereis* larvae**

Larva of *Platynereis dumerilii* acquired in a confocal overview. Nuclei are shown in cyan (DAPI), tubulin in magenta, and serotonin-positive neurons in yellow.
The marked region was additionally imaged with STED to resolve fine neuronal structures.

STEDYCON's superpowers:

Confocal imaging with state-of-the-art features

STED superresolution down to 30 nm

TIMEBOW lifetime imaging, FLIM fully integrated

Revolutionary design and flexibility, upgrades any microscope frame

Reliability and stability as a principle

Ease-of-use at its best with intuitive, browser-based software

Low cost of ownership compared to other confocal and STED microscopes

abberior's new *STEDYCON* is unique in many ways. It offers outstanding confocal, STED (stimulated emission depletion) superresolution, and lifetime imaging in the most user-friendly and compact format – small enough to fit on any lab bench.

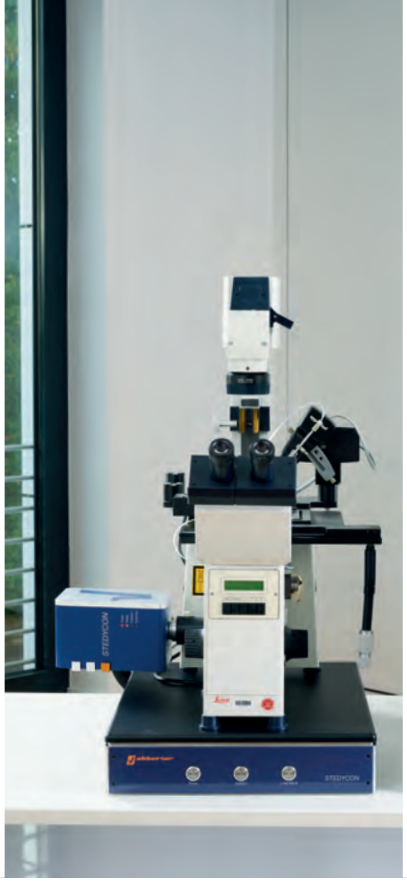
STEDYCON is a first-class upgrade: it connects to almost any microscope, instantly transforming it into a high-performance imaging system. All technology is ingeniously integrated, making *STEDYCON* virtually maintenance-free. For example, readjusting the laser beam path is unnecessary, as the lasers are aligned by design.

And then there is the software, which turns first-time users to long-term fans. With just a few clicks, you can go from basic settings to exactly the image you need for your experiment.

***STEDYCON* isn't just a microscope – it's ease-of-use for any imaging facility.**

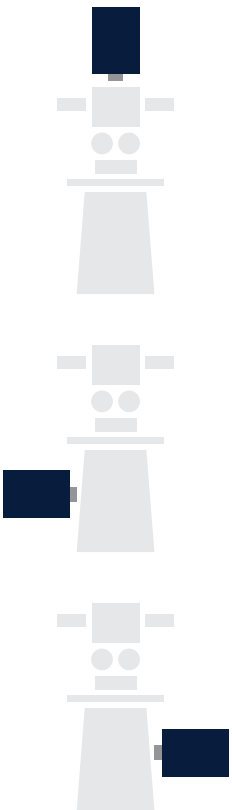
STEDYCON with Eclipse Ti2, Nikon

STEDYCON with Axio Observer, Zeiss



STEDYCON with DM IRBE, Leica

STEDYCON with BX53, Olympus



From zero to hero

Confocal, STED, and TIMEBOW lifetime imaging within minutes

Do you have an old microscope in your lab? Would you like to bring it up to scratch without breaking the bank? *STEDYCON* is your solution!

STEDYCON transforms any microscope frame into a full-fledged confocal and superresolution system, independent of the manufacturer, whether it is upright or inverted, old or new. All it needs is a free camera port and a good objective lens. Lasers, scanners, and detectors are already inside the *STEDYCON* box. That's why connecting the *STEDYCON* takes just a few minutes.

And the best: *STEDYCON* is much more affordable than other microscopes with confocal and STED functionalities.

***STEDYCON* is plug-and-play for serious science.**

STEDYCON will never let you down

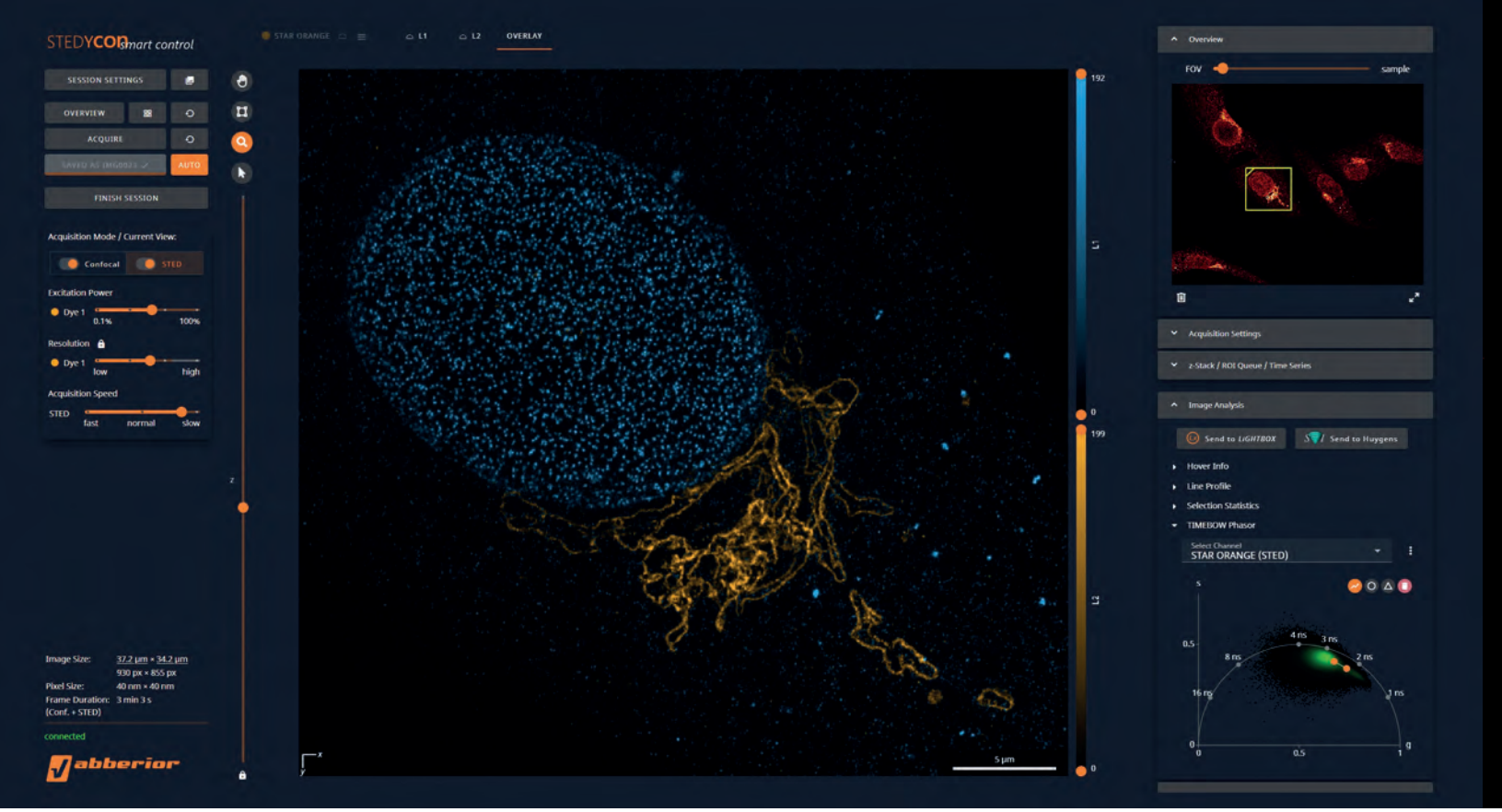
Runs anywhere. Works every time.

STEDYCON, with its uniquely compact design, is engineered for ultimate robustness. Its lasers – including the STED laser – are coupled into a single optical fiber – meaning that they are aligned by design, eliminating beam drift and ensuring consistent, high-performance imaging without the need for recalibration, ever.

The hardware-based *STEADYFOCUS* keeps the focus position permanently stable. Whether you browse through your sample or perform hours of multiposition time-lapse imaging, the *STEADYFOCUS* does the work for you, facilitating high throughput.

So no matter where you work – whether in climatized laboratories or standard office environments – *STEDYCON* will always deliver a rock-solid performance. It is virtually maintenance-free and all parts that require fine-tuning are motorized, allowing most adjustments to be handled remotely.

STEDYCON **is reliability by design.**



Beautifully simple and surprisingly powerful

STEDYCON's smart control software

Discover the elegance of *STEDYCON's* smart control software – devised to get you from system start to stunning superresolution in no time. Of course, with confocal imaging along the way. All that's required is a few minutes of training, and off you go!

Do you plan to do routine imaging to check established markers? Are you running complex microscopy experiments to address challenging research questions? *STEDYCON* smart control has it all.

The software's comprehensive dye database minimizes the required user input, while at the same time offering the option to fine-tune imaging settings.

Switching between confocal mode and superresolution STED is just one click, and lifetime data is always within reach with the fully integrated *TIMEBOW* module.

Flexibly use multi-positioning, tiling, and stitching to match your needs.

And if you have a complex imaging task that takes a couple of hours, you won't need to spend the time in front of the microscope. Monitor progress from the back of the seminar room, from home – anywhere with internet access. As the software is browser-based, you can control it from any device, anywhere, at any time.

***STEDYCON* is the definition of ease-of-use.**

***Drosophila* embryo**

3 color confocal image of a *Drosophila* embryo stained for chitin (*STAR RED*, cyan), tubulin (*STAR ORANGE*, magenta), and DNA (PicoGreen, green).

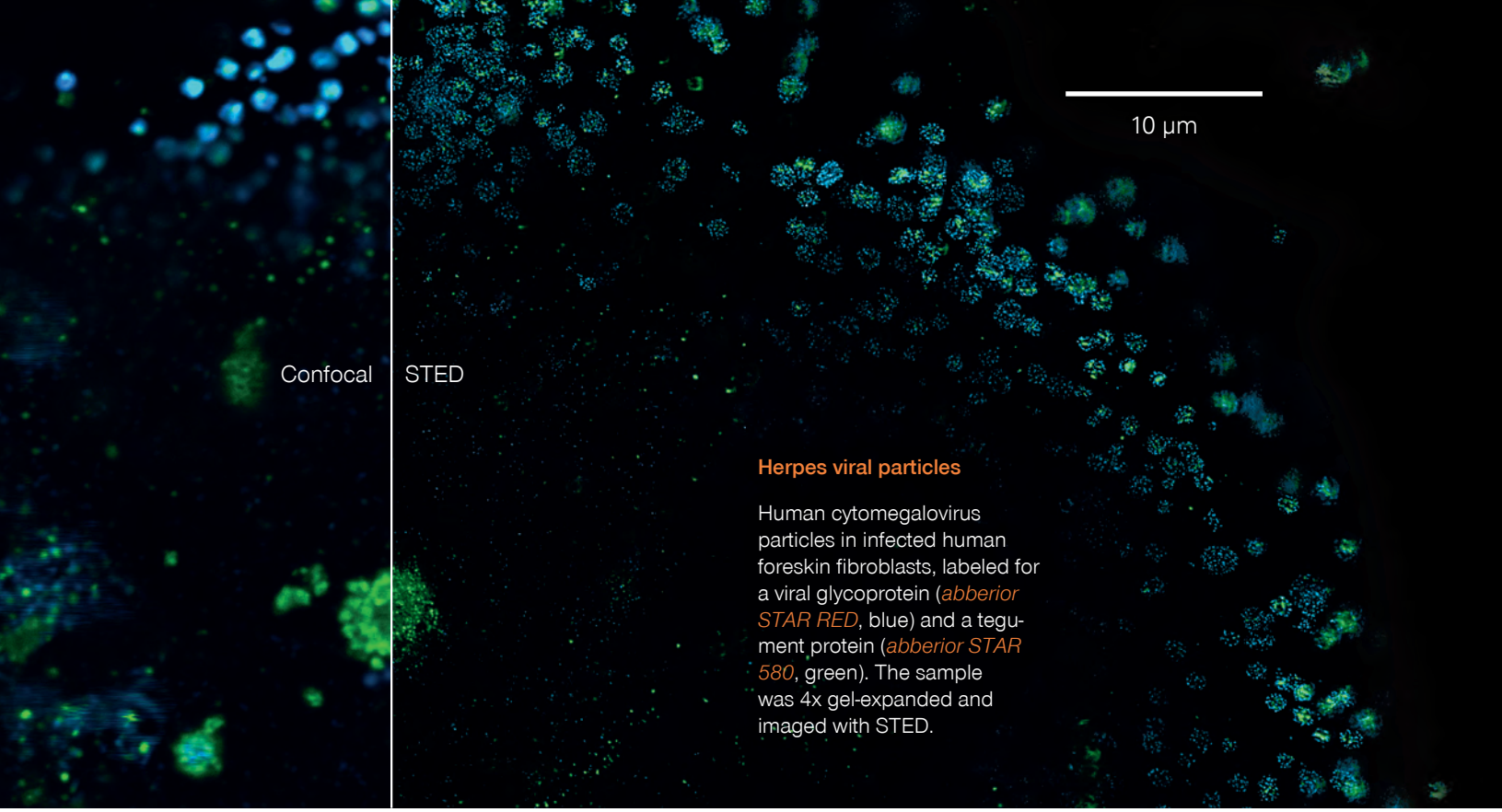
Performance made easy

Exceptional confocal imaging for all

Experience first-class confocal imaging with state-of-the-art features tailored for a wide range of applications. Capture dynamic biological processes with live cell imaging, analyze the distribution of your protein of interest, perform multicolor experiments, and acquire z-stacks and volumetric data. Swiftly adapt the system to your specimen, from single cells to tissues and whole organisms. Of course you can also mount delicate expanded specimens. *STEDYCON's* multipositioning allows exploring all kinds of samples, be it on single sample slides or in multiwell plates. Just let the software know what you have and start imaging.

And if your experiment demands more detailed images, switch to superresolution STED with a single click. Do you need lifetime information about your sample? Instantly access *TIMEBOW* lifetime imaging.

***STEDYCON* is your partner for everyday imaging.**



Herpes viral particles

Human cytomegalovirus particles in infected human foreskin fibroblasts, labeled for a viral glycoprotein (*abberior STAR RED*, blue) and a tegument protein (*abberior STAR 580*, green). The sample was 4x gel-expanded and imaged with STED.

Sample courtesy: Yannik Jensen and Jens Bosse, Centre for Structural Systems Biology, Hamburg; Hannover Medical School, Institute of Virology; Cluster of Excellence RESIST (EXC 2155); Leibniz Institute of Virology (LIV), Hamburg, Germany

Beyond the barrier

Gain more resolution with STED

Do you need more detailed insights than conventional confocal microscopy can offer? Step into the world beyond the diffraction limit with STED – delivering true physical superresolution at the push of a button.

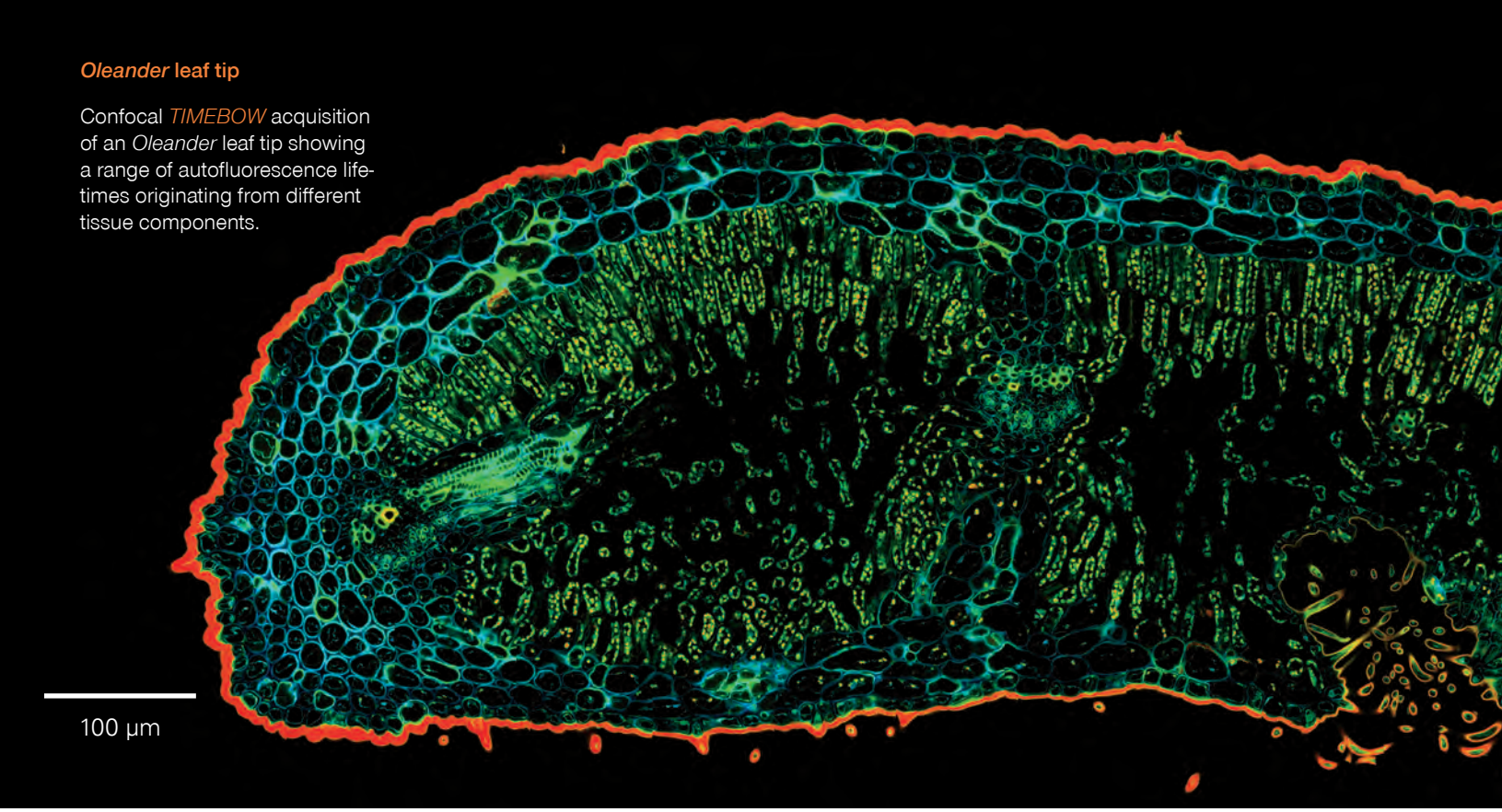
STED reveals subcellular structures inaccessible to conventional microscopy without complicating your workflow. With STED on the *STEDYCON*, superresolution is a piece of cake for every researcher.

Start with gentle, low STED power for an already significant increase in resolution. Add lifetime information using *TIMEBOW* STED for an additional resolution boost without harming your sample. Need even more detail? Push the resolution to 30 nm for best results.

STEDYCON **is a superresolution machine for everyone.**

Oleander leaf tip

Confocal *TIMEBOW* acquisition of an *Oleander* leaf tip showing a range of autofluorescence lifetimes originating from different tissue components.



TIMEBOW – gives time a color

More possibilities with lifetime imaging

Why limit yourself to just intensity and color? With *TIMEBOW*, you unlock an entirely new dimension of information: fluorescence lifetime. Make the most out of every photon you can get and gain insights into your sample that are invisible to traditional imaging.

Learn about the cellular microenvironment by monitoring changes in fluorescent lifetime. See subtle structural differences that are hidden in standard images. Exclude background signal or unwanted fluorescence based on lifetime signatures. Expand your imaging options by separating fluorophores emitting in the same spectral channel.

You may also use lifetime information to increase resolution by combining it with STED: *TIMEBOW* STED exploits the spatial information encoded in fluorescence lifetime to push resolution and contrast – for clearer, more detailed images.

Lifetime imaging on the *STEDYCON* is powered by PicoQuant's established MultiHarp 150 hardware. Fully integrated into the *STEDYCON* smart control software, command is seamless and intuitive with no need for external tools or expertise.

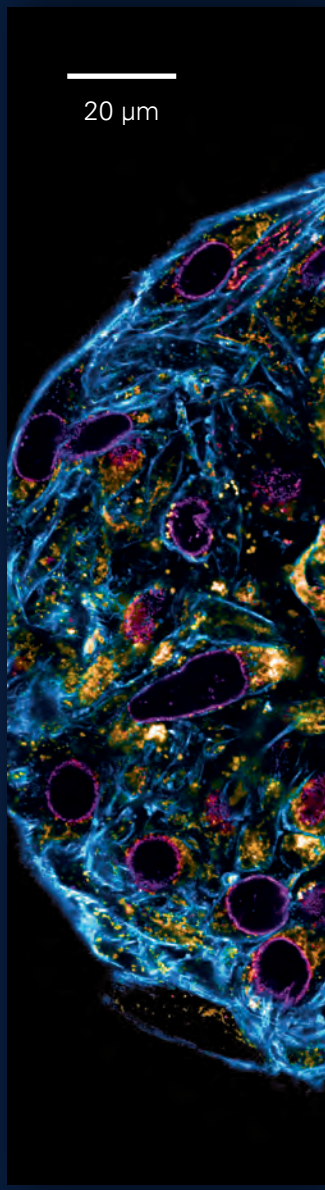
STEDYCON **is your fast track to lifetime imaging.**

Nobel laureate Stefan W. Hell founded *abberior* together with scientists from his laboratory. There, based on his groundbreaking ideas, STED and *MINFLUX* were invented and the field of superresolution microscopy took off.

Fluorescence microscopy will always be our passion and providing the best superresolution systems remains our mission.

	***STEDYCON* Specifications**
Usage	2D/3D multicolor confocal microscopy; STED superresolution microscopy
Resolution	Imaging resolution: STED < 40 nm, typically 30 nm[1)]
STED lasers	Pulsed laser at 775 nm (± 1.5 nm) at 40 MHz and ~1 ns pulse duration; 1.25 W
Excitation lasers	Excitation lines at 488 nm, 561 nm and 640 nm, all at 40 MHz with < 150 ps pulse duration; optional CW line at 405 nm
Scanner	QUAD scanner for highly precise beam positioning and arbitrary rotation Scan field: approx. 90 µm x 80 µm for 100x/1.4 NA oil objective Scanning frequency: up to 800 Hz Frame rate: 512 x 512 px > 1.1 frames/s Quasi-simultaneous line-interleaved scanning
Detectors	Avalanche photodiodes (APDs) with superior quantum efficiency (~65% at 650 nm) Detection bands: Detector 1: 650 – 700 nm Detector 2: 575 – 625 nm Detector 3: 505 – 550 nm Detector 4: DAPI detection 420 – 475 nm (optional) DynamicPLUS Detection compensating deadtime
Motorized pinhole	12 different pinholes (10 µm to 200 µm)
Autofocus	*STEADYFOCUS*: Continuous hardware autofocus, requires no additional optics in the imaging beam path
Alignment	All laser lines aligned by design; maintenance-free optical beam path
***STEDYCON* smart control software**	Browser-based, operational on PC, Mac or tablet; Imaging modes xy, xyz, xyt, xyzt, xyp, xyzp, xyztp, for up to 4 colors in line-interleaved scanning mode Includes auto-save function
***TIMEBOW* lifetime imaging** [2)]	For fluorescence lifetime measurement and separation; enhances STED resolution for gentler imaging; allows additional dye combinations not possible with spectral channels only

1) Depending on sample and dye, 2) Optional module



Spheroid

Confocal stitched image of a spheroid stained for nuclear pores (magenta), actin cytoskeleton (blue) and mitochondria (orange).

NIH-313 spheroid, fixed with 4% PFA, kindly provided by ibidi and prepared on µ-Slide VI 0.4 µ-Pattern ibiTreat.

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Danger – visible and invisible laser radiation. Avoid eye or skin exposure to direct or scattered radiation.
Class 4 laser product (IEC/EN 60825-1,2007/2014)
Wavelength: 405 nm, 850 nm (CW), 440 – 730 nm, 775 nm (pulsed)
Pulse length: < 1 ns (440 – 730nm), < 2ns (775nm)
Laser power: < 500 mW (400 – 730 nm, 850 nm), < 3 W (775 nm)

abberior is continually improving its products and reserves the right to change specifications without notice.