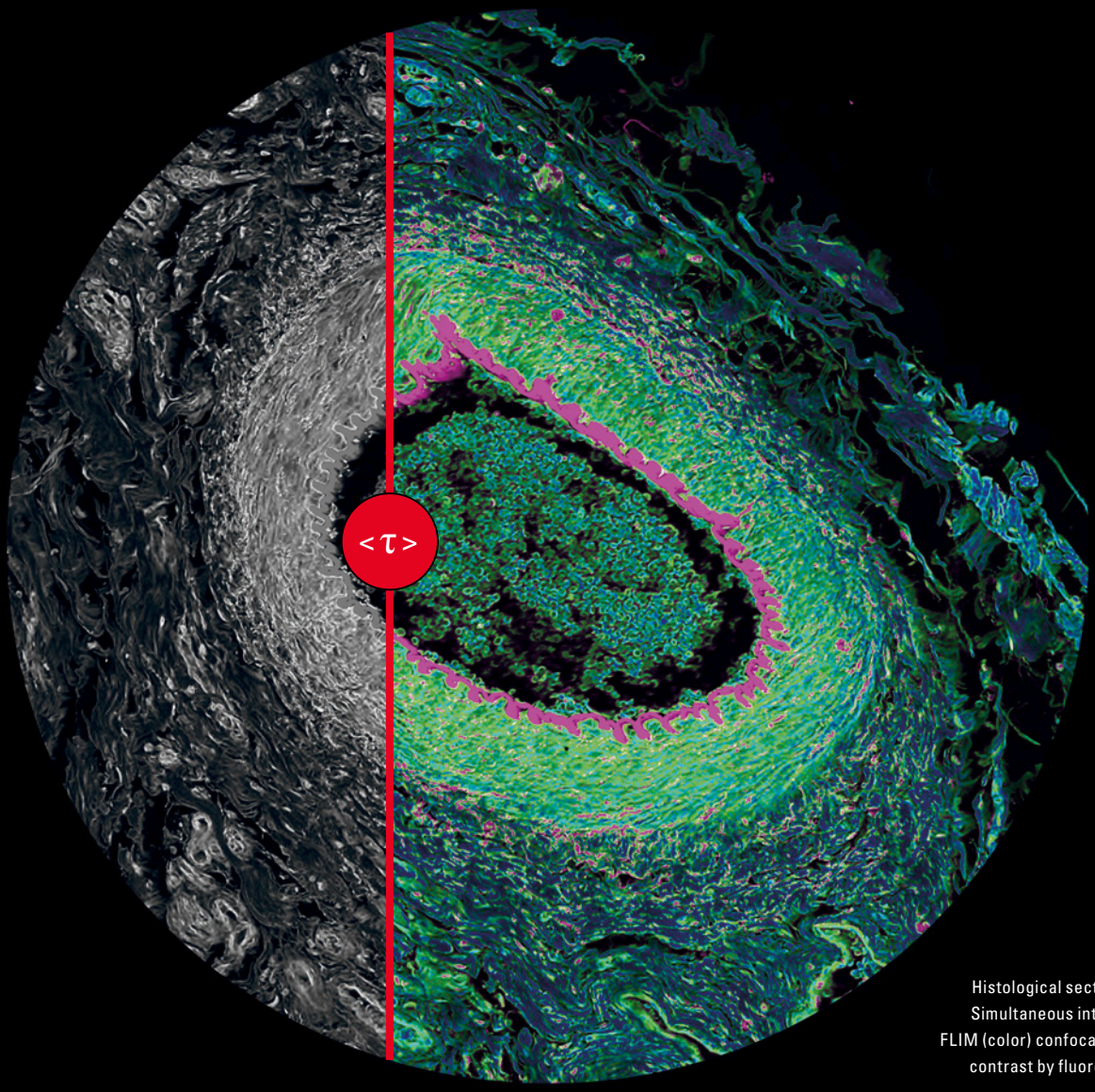
From Eye to Insight

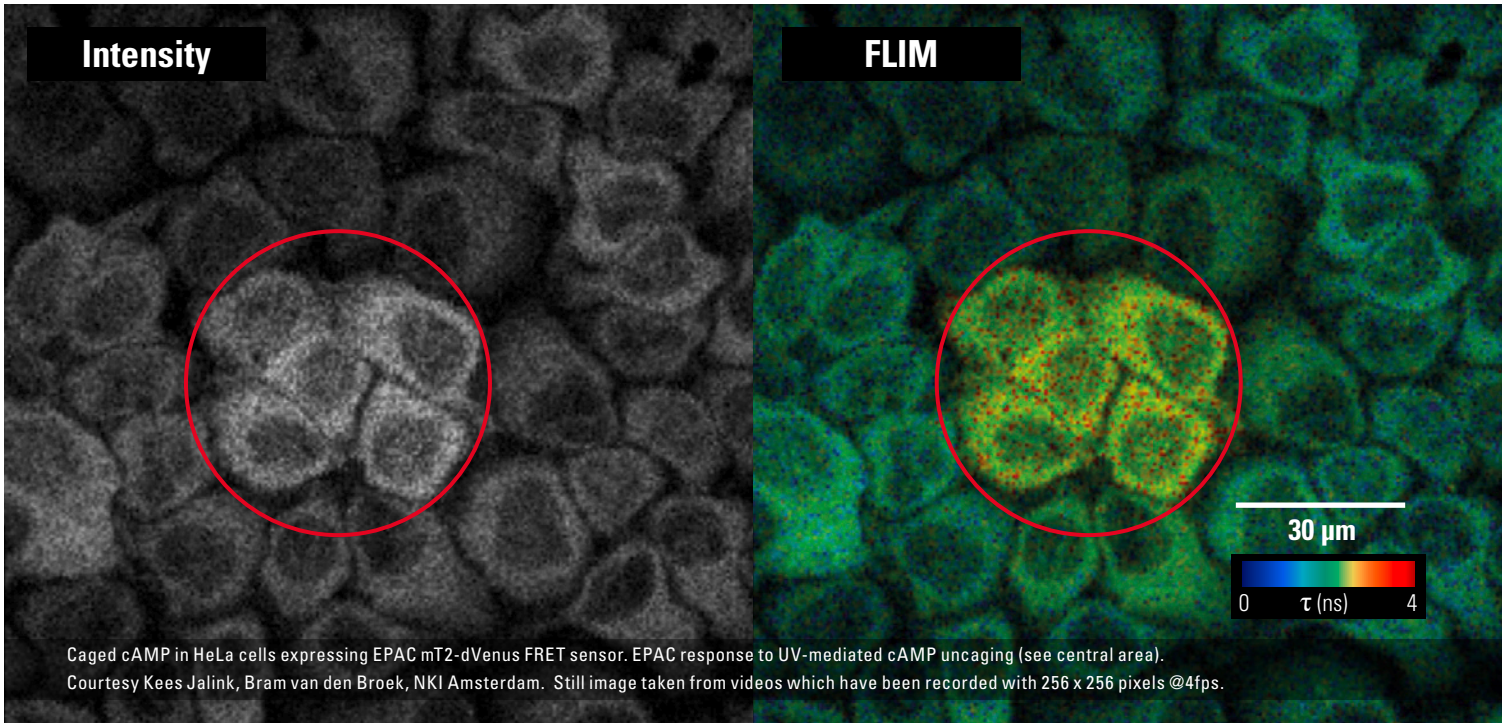
Leica
MICROSYSTEMS

The contrast is clear



Histological section from cat eye. Simultaneous intensity (gray) and FLIM (color) confocal imaging reveals contrast by fluorescence lifetime.

Leica SP8 FALCON – Lifetime imaging in an instant



Caged cAMP in HeLa cells expressing EPAC mT2-dVenus FRET sensor. EPAC response to UV-mediated cAMP uncaging (see central area).
Courtesy Kees Jalink, Bram van den Broek, NKI Amsterdam. Still image taken from videos which have been recorded with 256 x 256 pixels @4fps.

REVEAL MOLECULAR INTERACTION AND FUNCTION AT THE SPEED OF LIFE

The SP8 FALCON (FAst Lifetime CONtrast) offers functional imaging that lets you monitor interactions between proteins in living cells. Explore cellular physiology and dynamics to understand the basis of diseases.

SP8 FALCON is the first truly integrated solution for Fluorescence Lifetime Imaging (FLIM) and is at least 10x faster than previous solutions. It is fast enough to follow highly dynamic cellular events with lifetime-based biosensors and detect molecular interactions with FRET. The door to lifetime contrast in living cells is now wide open.

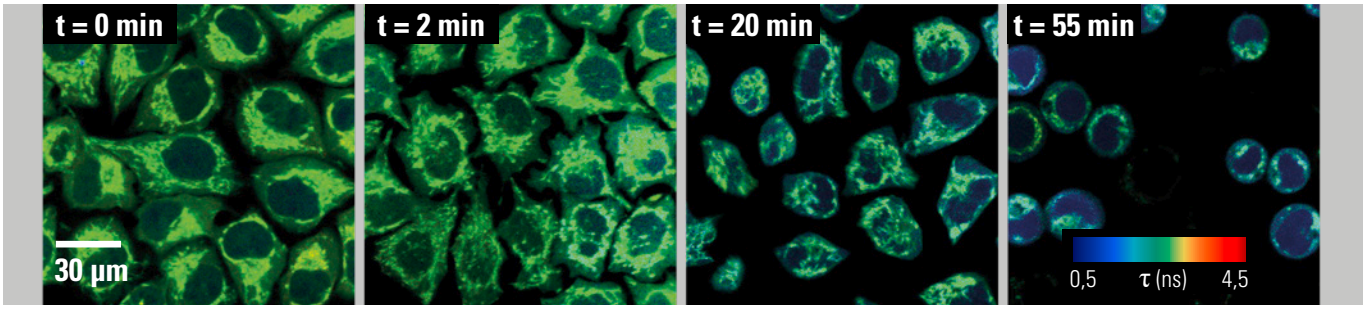
The SP8 FALCON meets your needs for acquiring and interpreting FRET measurements in your daily laboratory work.

More reliable and sensitive metabolic imaging

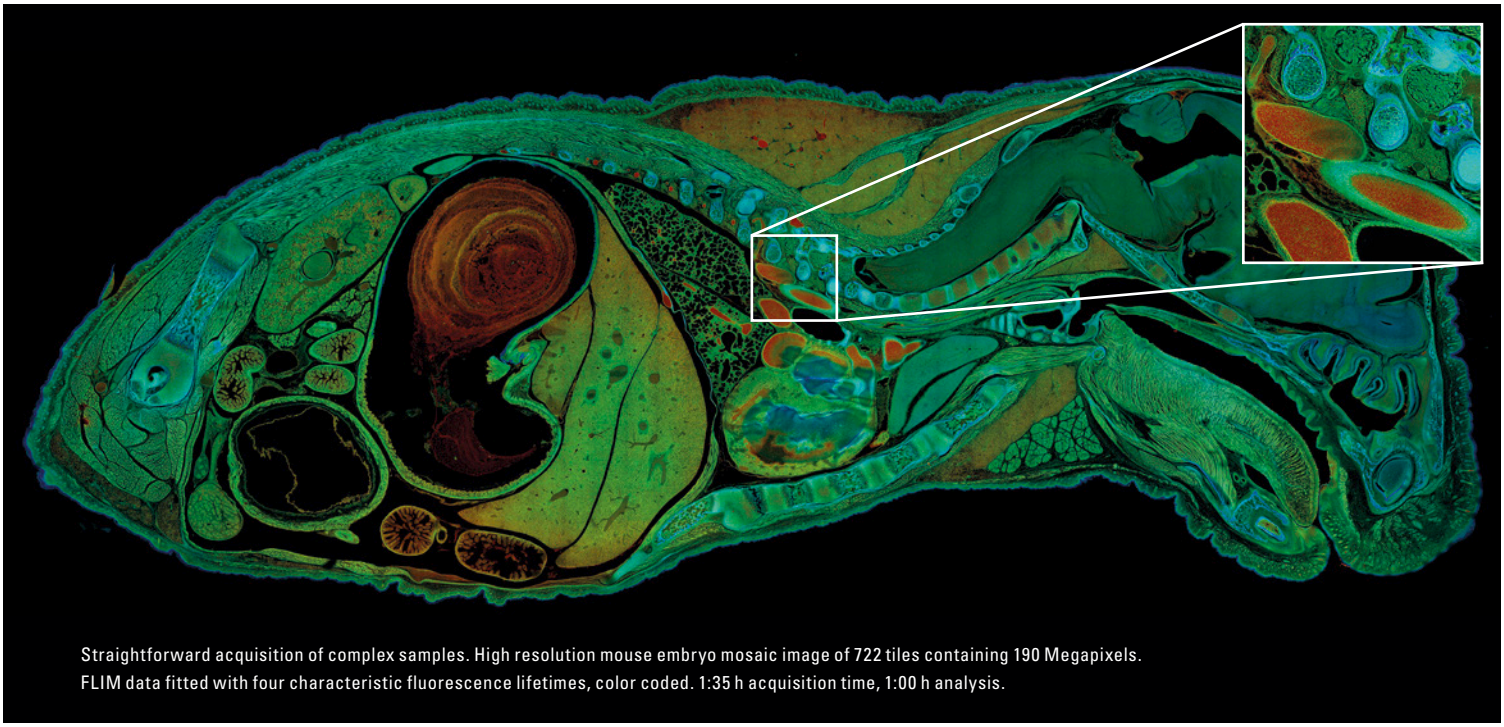
Endogenous fluorescence (autofluorescence) is often regarded as a problem. Lifetime imaging can turn it into valuable information. A major class of autofluorescent compounds are indicators for the metabolic state, for example dinucleotides NADH and FAD. Cells show different amounts of these dinucleotides depending on their metabolic state. Studying the autofluorescence with the SP8 FALCON allows for monitoring of cell differentiation or cancer development.

"We have scrutinized the Leica SP8 FALCON. It is every bit as accurate as dedicated TCSPC solutions, but with an intuitive interface and at turbo-speed."

Professor Kees Jalink, Ph. D.
Netherlands Cancer Institute, Amsterdam



Autofluorescence in mammalian cells at non-physiological conditions (pH 8.5). The signal correlates with changes in the NAD/NADH endogenous pool. The development of oxidative stress reads out as decrease of fluorescence lifetime over time. Image size: 512 x 512 pixels. Color bar scale: ns.



Straightforward acquisition of complex samples. High resolution mouse embryo mosaic image of 722 tiles containing 190 Megapixels.
FLIM data fitted with four characteristic fluorescence lifetimes, color coded. 1:35 h acquisition time, 1:00 h analysis.

FURTHER SEPARATION OF FLUOROPHORES BEYOND THE SPECTRAL OPTIONS

Fluorophores allow the labeling of different intracellular structures. But the differentiation of fluorophore species by their spectral properties quickly reaches its limits.

With the FALCON SP8, you can overcome this limit by using an additional dimension for the differentiation of labels: the fluorescence lifetime. The lifetime information is orthogonal on the spectral information. This offers the potential for a multitude of different fluorescent probes to be separated.

Enjoy even more freedom by combining options from the family range of the SP8 confocal microscope. Options include a white light laser source, acousto-optical beam splitting and multichannel spectral detection.

The results you need – with one click

Multi modalities in a single system with one software

Combining FLIM with other modalities was never as easy as with the SP8 FALCON. So far, researchers had to cope with complex wiring, and cumbersome file transfer tasks. With SP8 FALCON, you can extract lifetime information in multidimensional modes in the same way as recording standard confocal data.

SP8 FALCON is fully integrated in the LAS X acquisition and analysis software. It can record FLIM in four spectral channels simultaneously and up to 10 channels sequentially. SP8 FALCON gives you access to lifetime contrast in 3D-stacks, time-lapse sequences, and even large mosaic-tiling formats.

With the new LAS X NAVIGATOR, you can expand your viewing area up to 10,000 times, saving precious time in identifying your regions of interest and exploring your samples in a whole new way.

Let us inspire you, too

"The Leica SP8 FALCON is the first commercial system that offers integrated confocal and lifetime imaging that I can imagine using in a core facility environment."

Provost Professor Scott E. Fraser, Ph. D.
University of Southern California, Los Angeles

"Most FLIM instruments are attachments, this is a total change of perspective: having a truly integrated system – very powerful!"

Professor Enrico Gratton, Ph. D.
UCI Samueli School, University of California, Irvine

"The new Leica FLIM/FCS solution will boost their applicability - fantastically fast, flexible and straightforward to use."

Professor Christian Eggeling
University of Oxford, Oxford

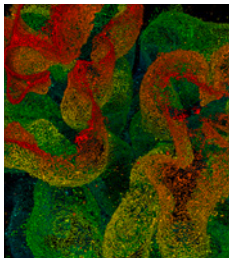
SP8 FALCON – MEMBER OF THE SP8 FAMILY

The SP8 FALCON is the latest addition to the established SP8 platform from Leica. The platform can be configured to accommodate different research methods ranging from confocal microscopy with super-resolution to STED nanoscopy.

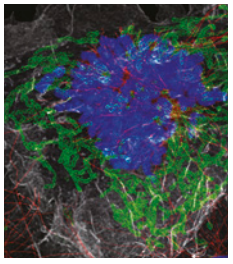
For users, this delivers both versatility and investment protection.

All instruments of the SP8 platform are open and adaptable to the user's research, both now and in the future.

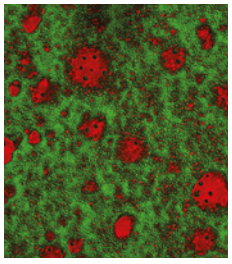
SP8 – The open Leica platform that covers your research



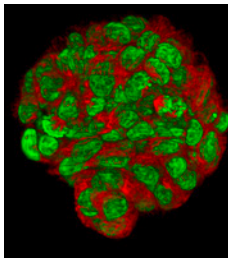
Nanoscopy
STED



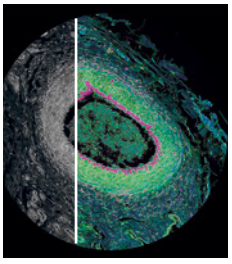
Super-Resolution
LIGHTNING



Vibrational Imaging
CARS, SRS



Light Sheet Imaging
DLS



Lifetime Imaging
FALCON

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