Leica
MICROSYSTEMS

STELLARIS
CONFOCAL RE-IMAGINED

GET CLOSER TO THE TRUTH

STELLARIS. Confocal re-imagined. In microscopy, our mission is to empower you to drive progress in science. To get you closer to the truth, we have re-imagined the confocal microscope.

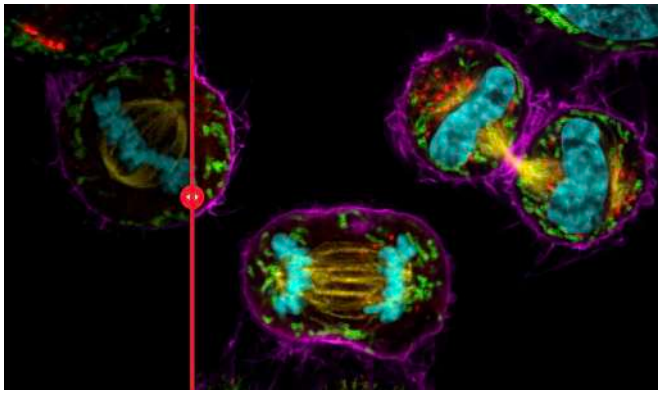
POWER
SEE MORE

POTENTIAL
DISCOVER MORE

PRODUCTIVITY
DO MORE

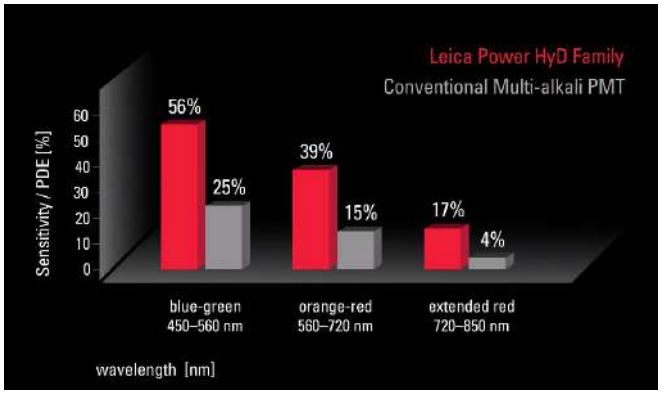
Imagine having the power to see more.
Collect more accurate and reliable data. Prove your hypothesis with precision.

POWER
SEE MORE



Traditional Confocal STELLARIS

New Generation Power HyD Detectors



Power to see more.

The synergy between the new generation of Power HyD detectors, the completely optimized beam path, and the unique White Light Laser gives you perfected imaging performance. Your answers are clearer, derived from brighter signals, more contrast and astounding detail from even multiple low abundance labels. Imagine the power of your images.

Image: Mitotic COS7 Cells – Cyan: H2B/Yellow: Mitotic Spindle/Red: Golgi/Green: Mitochondria/Magenta: Actin.
Sample Courtesy: Jana Döhner, Urs Ziegler, University of Zürich

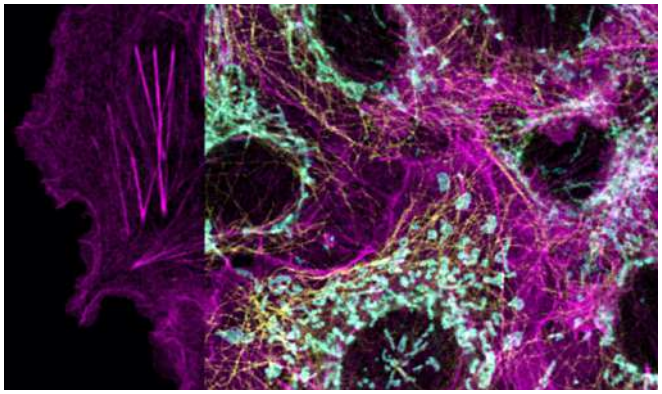
More brightness, more detail.

- Experience enhanced image quality, as a result of an ideal combination of brightness, resolution and contrast
- Get better insight about the native state of your sample than ever before, thanks to high detection efficiency
- Have quantitative results, thanks to Leica Microsystems' proprietary approach to photon counting

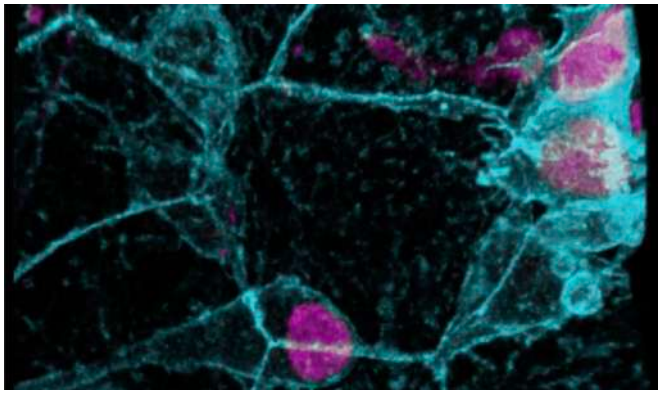
Ultra sensitive signal detection.

- Detect low signals with the most commonly used fluorophores thanks to the Power HyD detectors
- Gain 2x higher Photon Detection Efficiency (PDE) compared to conventional Photomultiplier Tubes (PMT) and 3x higher in the extended red range

POWER
SEE MORE



Traditional Confocal



STELLARIS platform
Excitation up to 790 nm with WLL
Detection up to 850 nm

Maximized multicolor flexibility.

- Image more markers within one sample at the same time. Expand the range of available markers with a broader red spectrum for excitation. These benefits are made possible by our next-generation White Light Lasers.
- Set a new standard for imaging in your research with Power HyD detectors. They deliver the highest sensitivity with an incredibly wide spectral range, up to 850 nm, which is already in the near infrared.
- Experience complete spectral freedom using our next-generation White Light Lasers which allow a perfect match to the fluorochrome. Up to 8 single excitation lines from 440 nm to 790 nm can be used simultaneously.
- Enjoy less complexity and more flexibility from a single laser doing the work of many

Image: Mitotic COS7 Cells, SiR-Actin (ex: 647 nm, em: 657-740 nm), AF750-Tom20 (ex: 750 nm, em: 760-790 nm), AF790-memb (ex: 790 nm, em: 810-850 nm), Sample Courtesy: Jana Döhner, Urs Ziegler, University of Zürich

Gentle live cell imaging.

- Perform imaging for a longer period, since both excitation as well as detection are optimally tuned with the smart combination of the Power HyD detectors and next-generation White Light Lasers
- Preserve your sample's integrity through efficient signal acquisition at the lowest required levels of illumination

Image: Zebrafish posterior lateral line primordium migration.
Cyan: Membranes, GFP, Magenta: Nuclei, tdTomato
Sample Courtesy: Jonas Hartmann, Gilmour Group, EMBL Heidelberg

Key Technical Advancements.

Power HyD detectors deliver a Photon Detection Efficiency (PDE) of up to 56% with the most commonly used fluorophores. At least 2x more efficiency than what can be achieved with conventional alkali photomultipliers. PDE in the extended red range is even 3x higher.

Near Infrared (NIR) detection range is extended to 850 nm, accommodating 3 additional detection colors

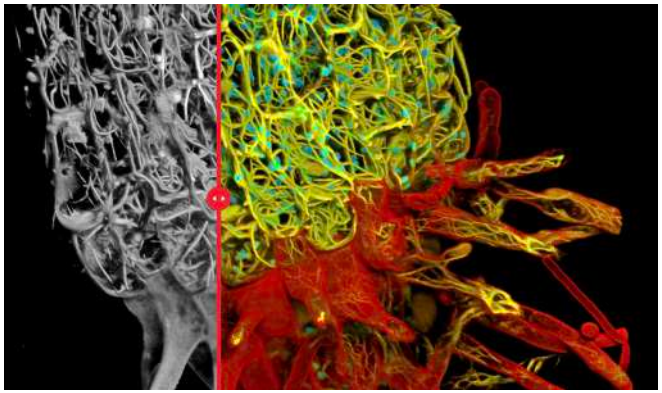
Up to 67% improved dynamic range compared to current state-of-the-art detectors*
* Comparison of max counts SP8 HyD vs Stellaris HyD X and HyD R in photon counting mode (CW)

Up to 8 excitation lines from 440 nm to 790 nm can be used simultaneously with the next generation White Light Lasers

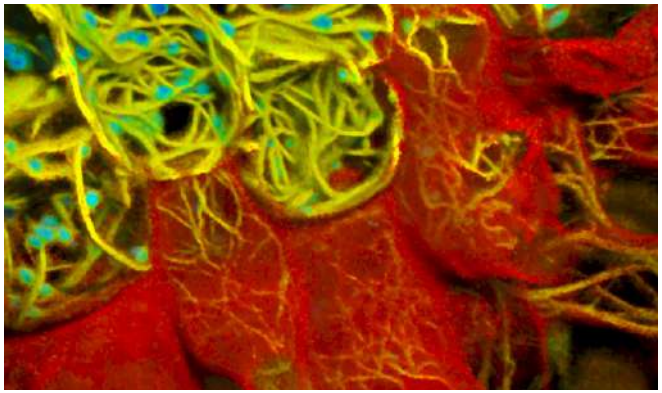
A redesigned beam path that maximises transmission efficiency

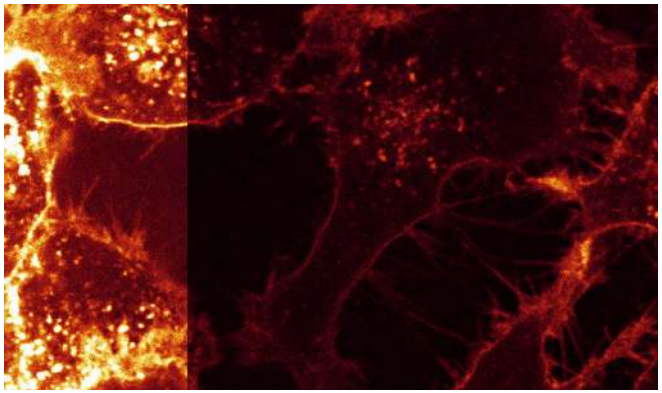
POTENTIAL
DISCOVER MORE

Imagine the potential to explore a new dimension in your samples.



Traditional Confocal STELLARIS





Reflection Reflection removed with TauGating

Potential to discover more.

Extract a new dimension of information from every sample and increase the scientific impact of your research using lifetime-based data to explore the function of molecules in their cellular context.

Obtain additional information from experiments performed with STELLARIS using our new and unique TauSense technology.

Gain access to functional imaging thanks to TauSense, a revolutionary set of imaging modes, including TauContrast, TauGating, and TauSeparation, based on fluorescence lifetime.

Access to fluorescence lifetime imaging, a form of contrast orthogonal to fluorescence intensity, is always available with STELLARIS. Explore the cell's microenvironment and metabolic states with multiplex imaging based on lifetime. Imagine the potential for your research.

Explore new dimensions of information.

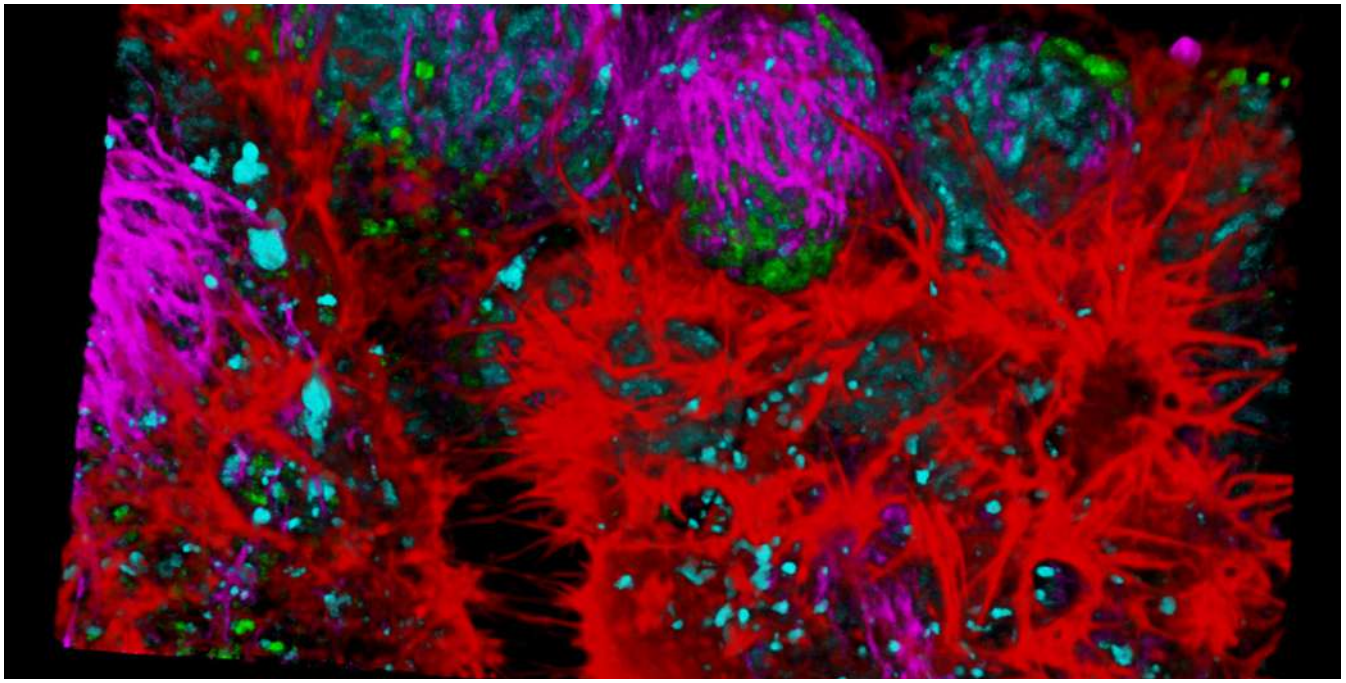
- TauContrast gives you immediate access to functional information such as metabolic status, pH and ion concentration
- Gain an additional dimension, offering unprecedented, unexplored insight, and potentially immense value to your research

Image above and left: Root-hypocotyl-junction of Arabidopsis thaliana (Era et al. Plant Cell Physiol., 2009), Chlorophyll, Life-Act Venus, IProp., Sample courtesy: Dr. Krebs, COS, University of Heidelberg.

Improve image quality.

- Maximize detection efficiency by removing unwanted autofluorescence while preserving the desired signal with TauGating
- Enjoy the ease of extracting relevant information from samples where intrinsic contributions have contaminated the signal

POTENTIAL
DISCOVER MORE



Key Technical Advancements.

Pixel by pixel readout of the mean photon arrival time, simultaneous with intensity detection

Up to 16 time-gates simultaneously, digitally tunable

Life-time based component separation algorithm

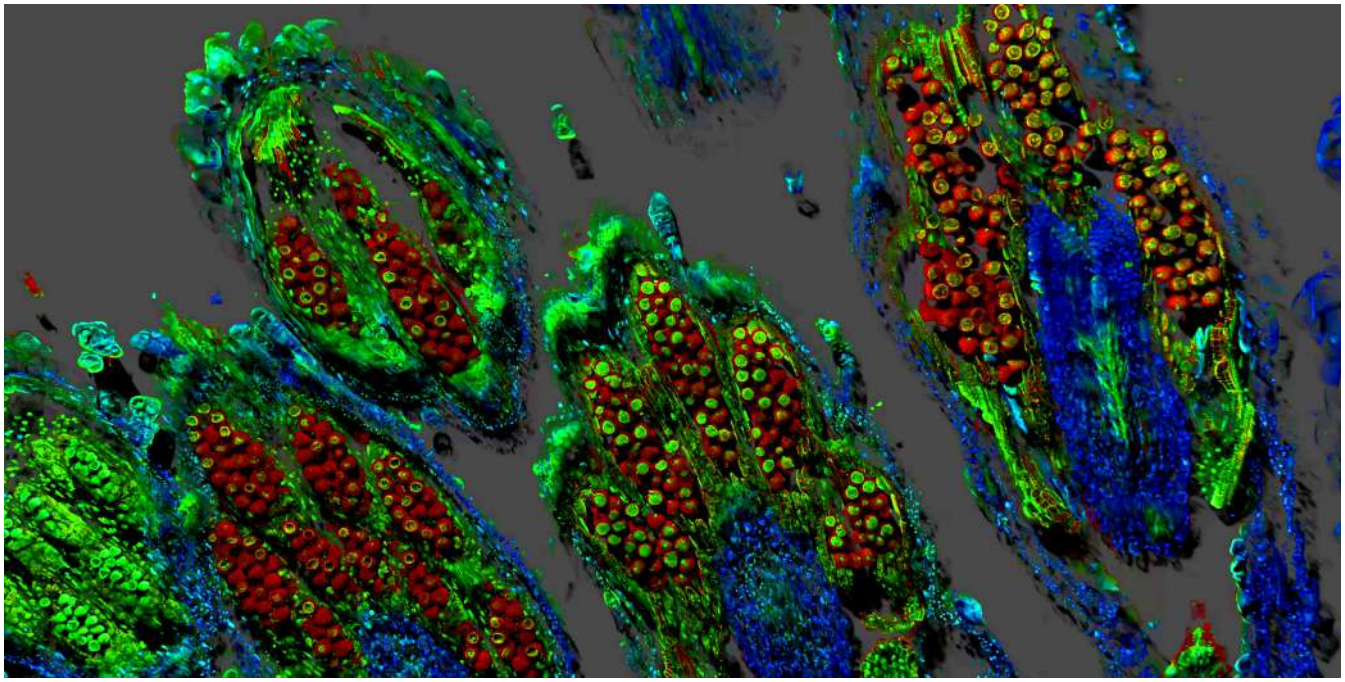
Multiplex beyond spectral options.

- Separate species with TauSeparation even when their emissions fully overlap
- Expand the number of simultaneous detection channels by using lifetime-based information which is complementary to spectral information

Image: NE-115 cells. LifeAct-mNeon Green, MitoTracker Green, NUC Red, and SiR-tubulin. Courtesy: Max Heider, University of Bern and Spirochrome

PRODUCTIVITY
DO MORE

Imagine acquiring images from complex samples with a few clicks.



ImageCompass

Productivity to do more.

ImageCompass is a completely new smart user interface. Setting up complex experiments is now significantly easier and more intuitive than ever before. All you need to know is how you prepared your sample.

Lightning technology and the Navigator interface optimize your experiments. Imagine never needing to compromise between speed and image quality. Imagine a fully comprehensive overview of your sample in an instant.

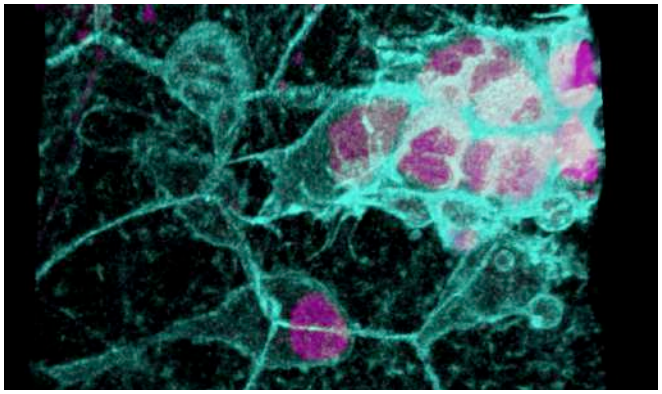
Our new Navigator tool gives you the ability to freely navigate through your sample and explore relevant details instantly in full quality. Imagine your productivity improvement.

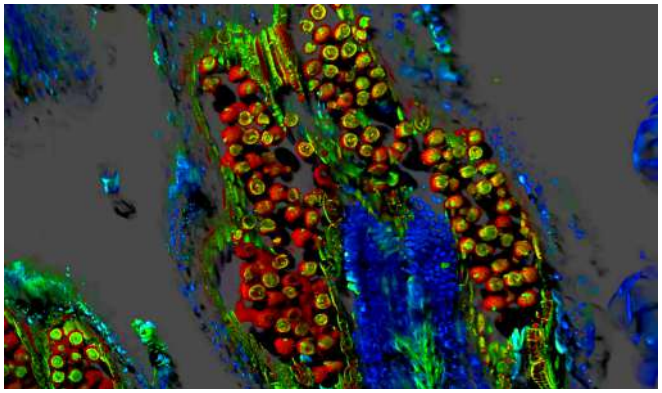
- Spend less time training first-time users of confocal systems and give them the confidence to perform advanced experiments
- Easily be in full control of your experimental setup with a few clicks
- Be intuitively guided through your experiment setup and acquisition

Simple, even for complex experiments.

- "Drag and drop" to add fluorophores
- Automatic optimization of excitation and detection
- Intuitive access
- Auto-configuration of imaging parameters

PRODUCTIVITY
DO MORE





Key Technical Advancements.

Set up a multicolor experiment with 1 click per fluorophore

Maximal signal yield through optimal acquisition settings, automatically selected

Uncompromised temporal resolution up to 420 frames/sec maintaining optimal image quality, further enhanced by LIGHTNING

Access to fluorescence lifetime information in 1 click

Fast across scales in time and space.

- Fast volume acquisition at the highest temporal resolution
- Superb image quality at full speed, in real time, delivered using the combination of LIGHTNING, the resonant scanner, and our new rolling average
- Low phototoxicity with less excitation light

Image: Zebrafish posterior lateral line primordium migration.
Cyan: Membranes, GFP, Magenta: Nuclei, tdTomato
Sample Courtesy: Jonas Hartmann, Gilmour Group, EMBL Heidelberg

Relevant details, instantly identified.

- Map your specimen thanks to LAS X Navigator
- Localize areas of importance and identify relevant details quickly

Leica

MICROSYSTEMS

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LASER RADIATION

VISIBLE AND INVISIBLE- CLASS 3B
AVOID DIRECT EXPOSURE TO BEAM

P < 500 mW 350- 700nm
IEC 60825-1: 2014

LASER RADIATION

VISIBLE AND INVISIBLE- CLASS 4
AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION

Paverage < 4 W 350- 1600nm >40fs
IEC 60825-1: 2014