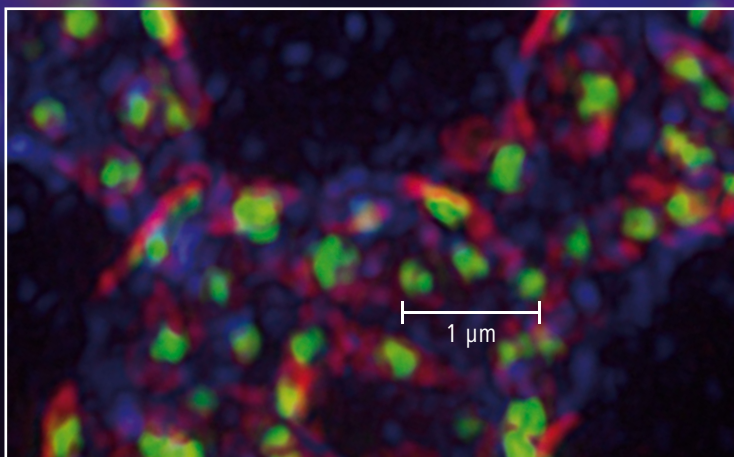


ELYRA

Enter the World of Superresolution



See Beyond Conventional Light Microscopy!

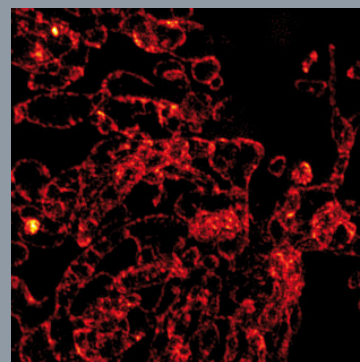


We make it visible.

Open Up a New Dimension with Superresolution

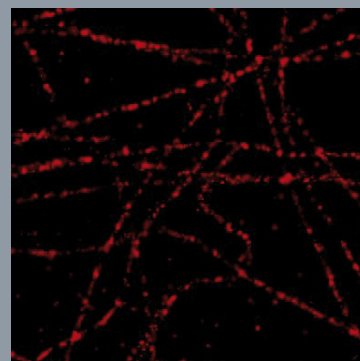
The ELYRA product range puts two powerful and complementary technologies at your disposal in dedicated systems for superresolution microscopy.

See beyond conventional light microscopy!



SR-SIM image of mitochondria in cultured mammalian cells (stained with a fluorescent fusion protein containing mCherry).

Authors: Christian Wunder and Jennifer Lippincott-Schwartz, National Institutes of Health (NIH), Bethesda, USA, **page 7**



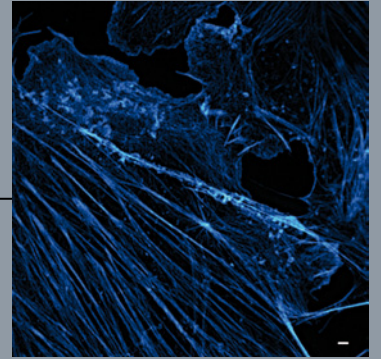
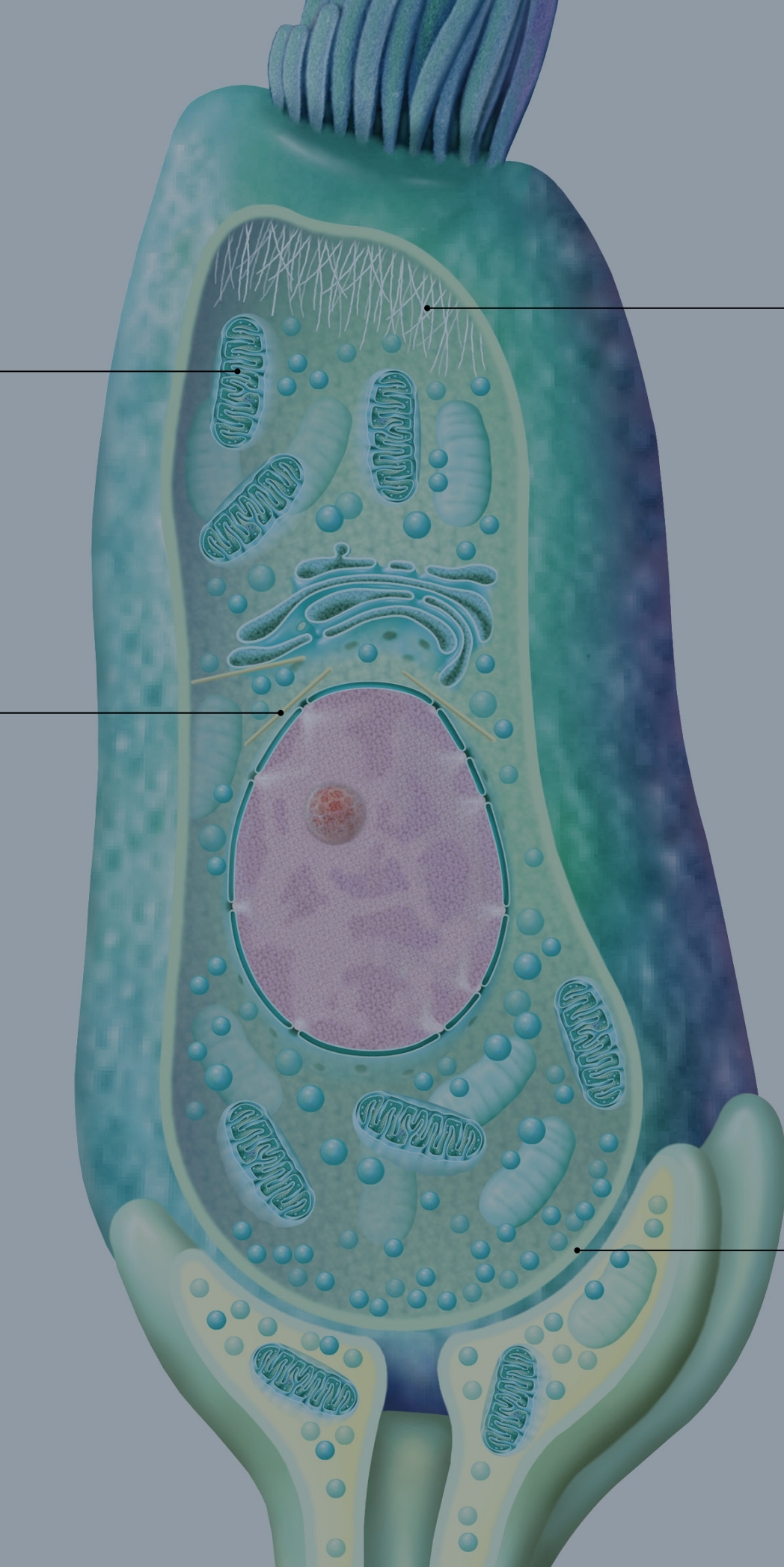
dSTORM image of microtubuli in a cultured mammalian cell (labelled with Alexa 647).

Author: Shinsuke Niwa, University of Tokyo, Japan, **page 9**

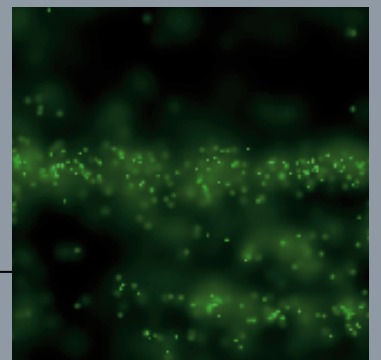
Cover:

SR-SIM image of synapses at the neuromuscular junction of *Drosophila*. Triple staining for the presynaptic active zone marker Brp (green), postsynaptic glutamate receptors (red) and the presynaptic membrane (blue).

Author: Jan Pielage, Friedrich Miescher Institute (FMI), Basel, Switzerland



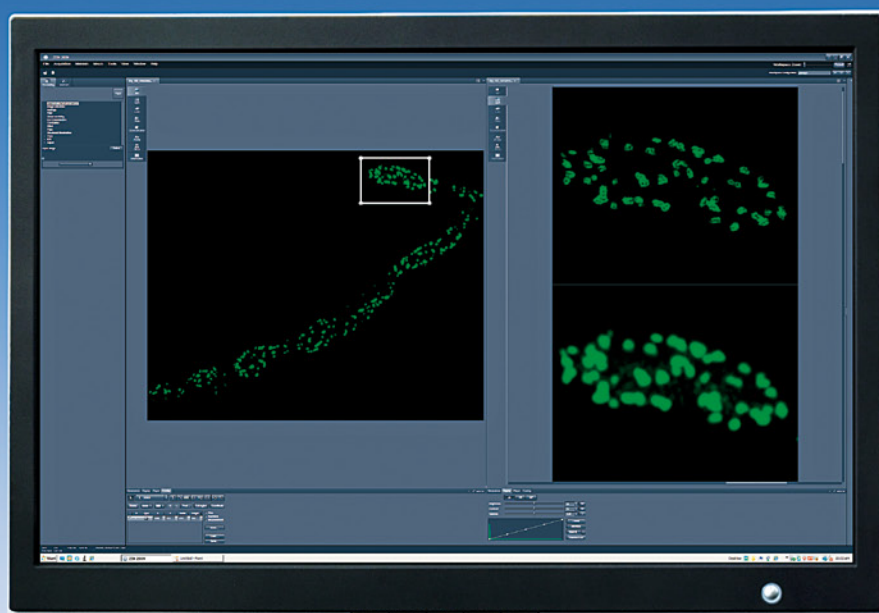
*SR-SIM image of the actin cytoskeleton in a cultured cell, **page 16***



*PALM and SR-SIM image of focal adhesions in a cultured cell.
Author: Martin Bastmeyer,
University of Karlsruhe, Germany,
page 11*

ELYRA

Enter the World of Superresolution





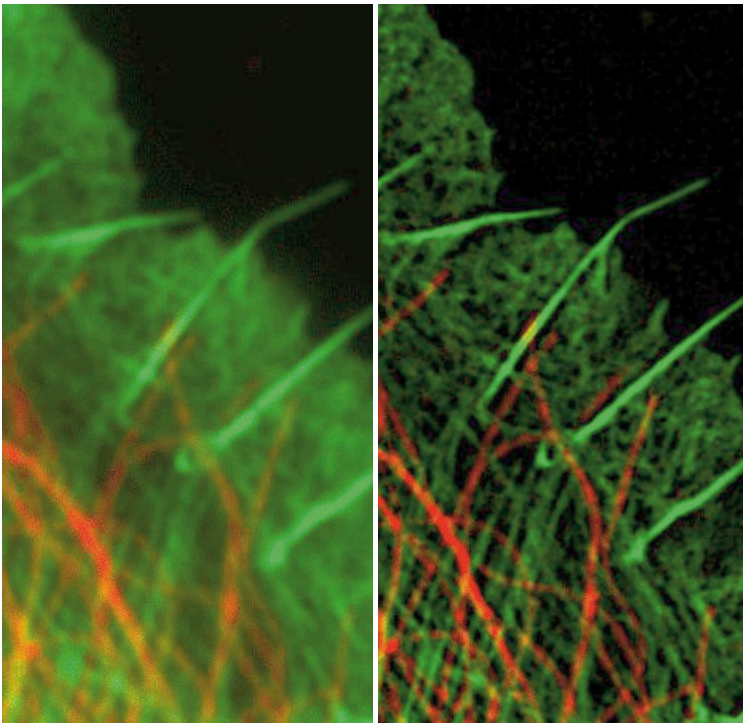
ELYRA S.1

Put Flexibility First with Structured Illumination

ELYRA S.1 can image any fluorophore – with up to twice the resolution of a conventional light microscope.

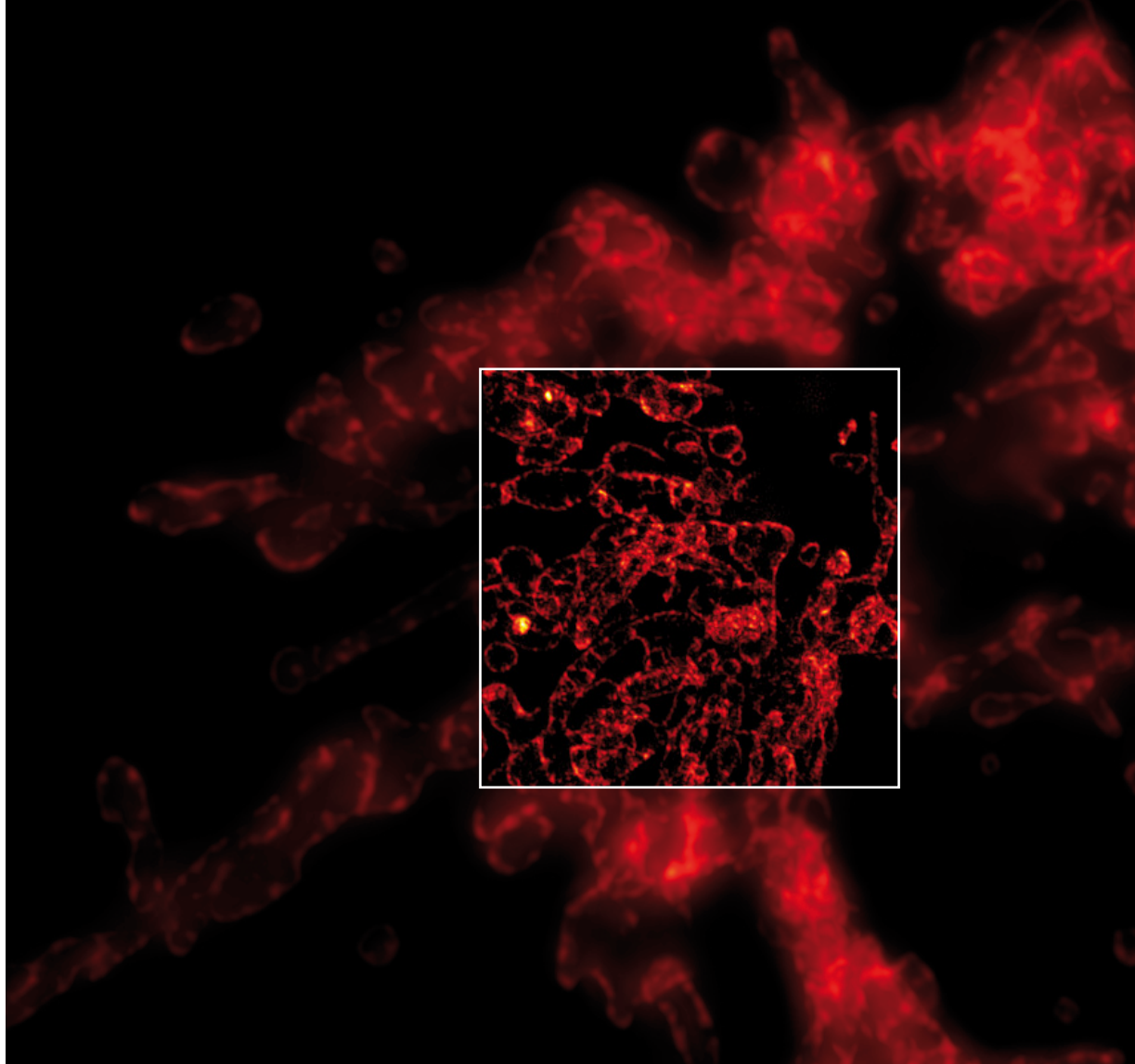
You have invested a lot of time and energy in producing fusion proteins and multicolor staining protocols that are perfectly adapted to your experimental system. Now, with ELYRA S.1, you can capture superresolution data with ease, using samples that may already be in your refrigerator! Do you need Z-sectioning for 3D data acquisition? A fast, light efficient detection? Then ELYRA S.1 is your ideal choice.

*SR-SIM image of F-actin (green) and microtubules (red) in a chicken primary fibroblast.
Author: Martin Bastmeyer, University of Karlsruhe, Germany*

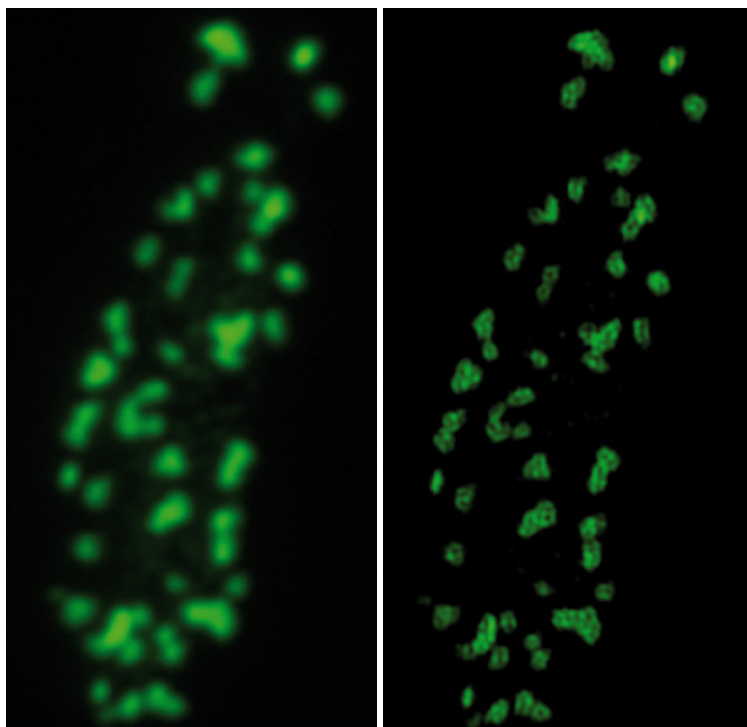


- Gain up to twice the resolution of conventional light microscopes, depending on numerical aperture (NA) and wavelength.
- Image any fluorophore, using structured illumination (SR-SIM), a universal fluorescence technique.
- Use up to 4 AOTF-controlled laser lines and a wide choice of filters to exactly match your experimental needs.
- Acquire multi-color SR-SIM data with up to four channels.
- Collect information in 3D. SR-SIM is unique as it improves the resolution in both lateral (XY) and axial (Z) direction. This lets you acquire optical sections and Z-stacks easily.
- EMCCD technology achieves exceptional detection sensitivity and allows for imaging of bleach-sensitive and live specimens.
- The megapixel EMCCD camera is the ideal choice for recording SR-SIM data of entire cells.
- Software-controlled motorized grating and filter exchange allows for the optimal adjustment of excitation light modulation and detection conditions.
- Laser-safe incubation solutions ensure highest stability.
- Combine it with the optional LSM 710 or LSM 780 for the full spectrum of modern confocal imaging.

SR-SIM image of mitochondria
in cultured mammalian cells
(stained with a fluorescent fusion
protein containing mCherry).
Authors: Christian Wunder and
Jennifer Lippincott-Schwartz,
National Institutes of Health
(NIH), Bethesda, USA



SR-SIM image of Brp protein
complexes in a neuromuscular
junction (*Drosophila* larva).
Authors: Hermann Aberle
and Christian Klämbt, Uni-
versity of Münster, Germany



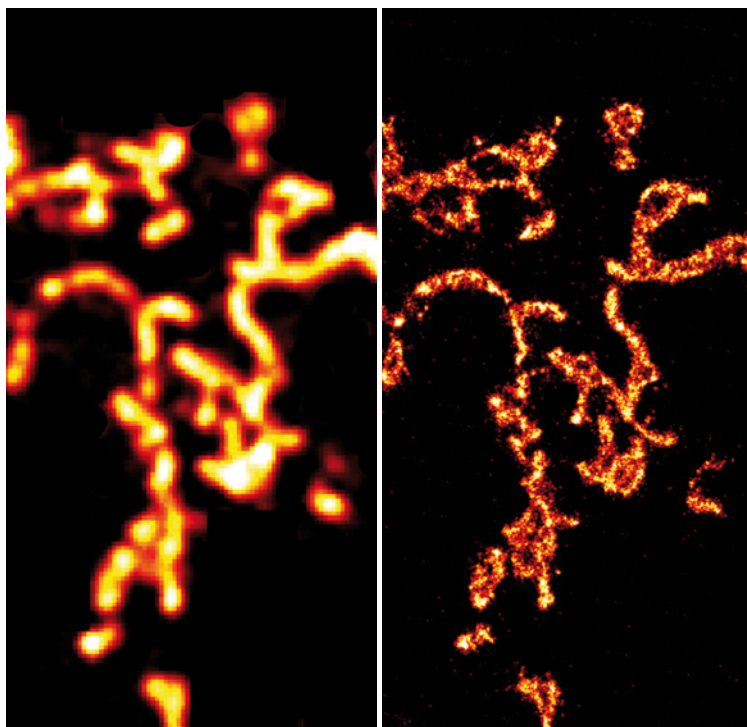
ELYRA P.1

Localize Single Molecules for Unrivalled Precision

ELYRA P.1 takes light microscopy to the very limit. By localizing single molecules, you can achieve effective lateral resolutions down to 20 nm.

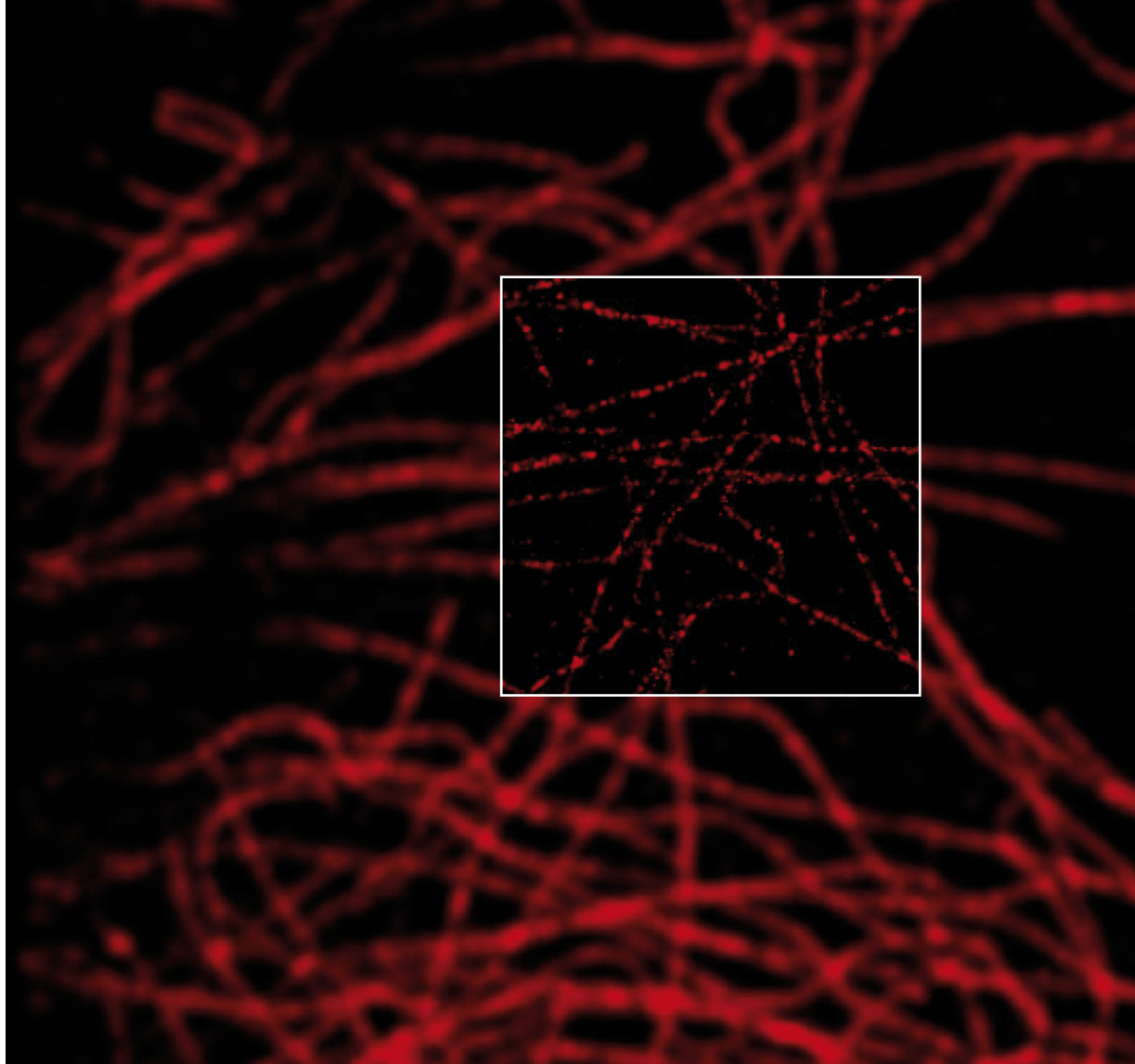
You are interested in processes that take place near the coverslip. You want to see and measure single molecules in or near the plasma membrane (lipid rafts, receptor clustering, cell-substrate adhesion sites). Within this realm, PALM takes you into a new world of data quality. Detection with an effective resolution down to 20 nm can show you substructure and patterns where conventional microscopy will reveal “merely” co-localization. As a single molecule method, PALM is inherently quantitative – every image is a molecular statistics experiment.

*dSTORM image of mitochondria in a
cultured mammalian cell.
Authors: Marcus Sauer and Mike Heile-
mann, University of Bielefeld, Germany*

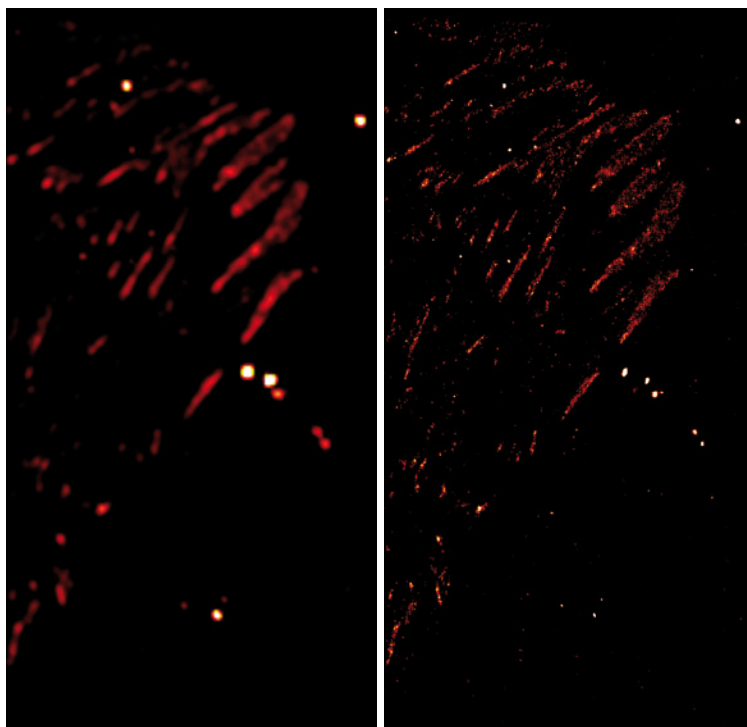


- Examine processes close to the plasma membrane.
- TIRF illumination with a penetration depth in the range of 100 nm offers excellent signal-to-noise ratios.
- State-of-the-art EMCCD technology allows single molecule sensitivity in wide field and TIRF illumination.
- Observe the cell with an optional camera for transmitted light detection in the infrared (IR) range.
- Powerful lasers and adjustable field of views allow high power densities and efficient switching of a broad variety of fluorochromes between different states. The finely adjustable intensity of the 405 nm laser enables balanced activation.
- The incubation system offers environmental shielding and protection from unwanted exposure to laser light.
- Drift correction in X, Y and Z based on fiducial markers allow precise determination of molecule localization.
- Fully automated control yields high reproducibility and fast switching between different configurations.

*d*STORM image of microtubuli
in a cultured mammalian cell
(labelled with Alexa 647).
Author: Shinsuke Niwa,
University of Tokyo, Japan



PALM image of focal
adhesions in a cultured cell
stained with tdEOS-paxillin.
Author: Hari Shroff,
National Institute of
Biomedical Imaging and
Bioengineering (NIBIB),
Bethesda, USA



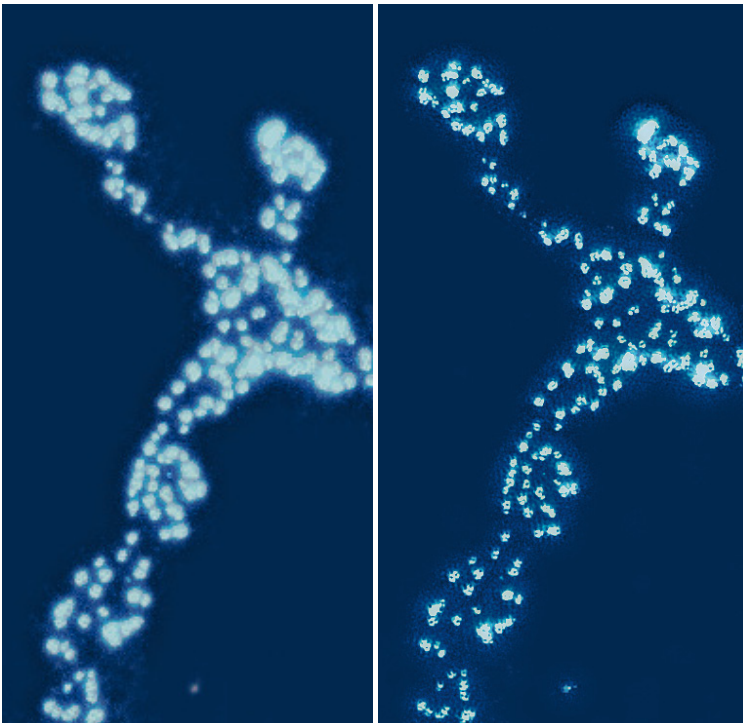
ELYRA PS.1

Your Universal Superresolution Platform

Forget about compromises. ELYRA PS.1 lets you choose the superresolution method that's best adapted to your specimen – even in the middle of an experiment – and with the same superb image quality.

Never have so many imaging modalities been available on a single platform. The complexity of experiments in biomedical research often takes you beyond what a single imaging method can provide. Because you are interested in processes that take place within the context of an entire cell, superresolution imaging will work best if you can image this context at the same time, switching between different imaging methods even in the course of an experiment.

Consecutive laser scanning and SR-SIM images of an immunofluorescence staining against Brp protein in a Drosophila neuromuscular junction.
Authors: Hermann Aberle and Christoph Klämbt, University of Münster, Germany



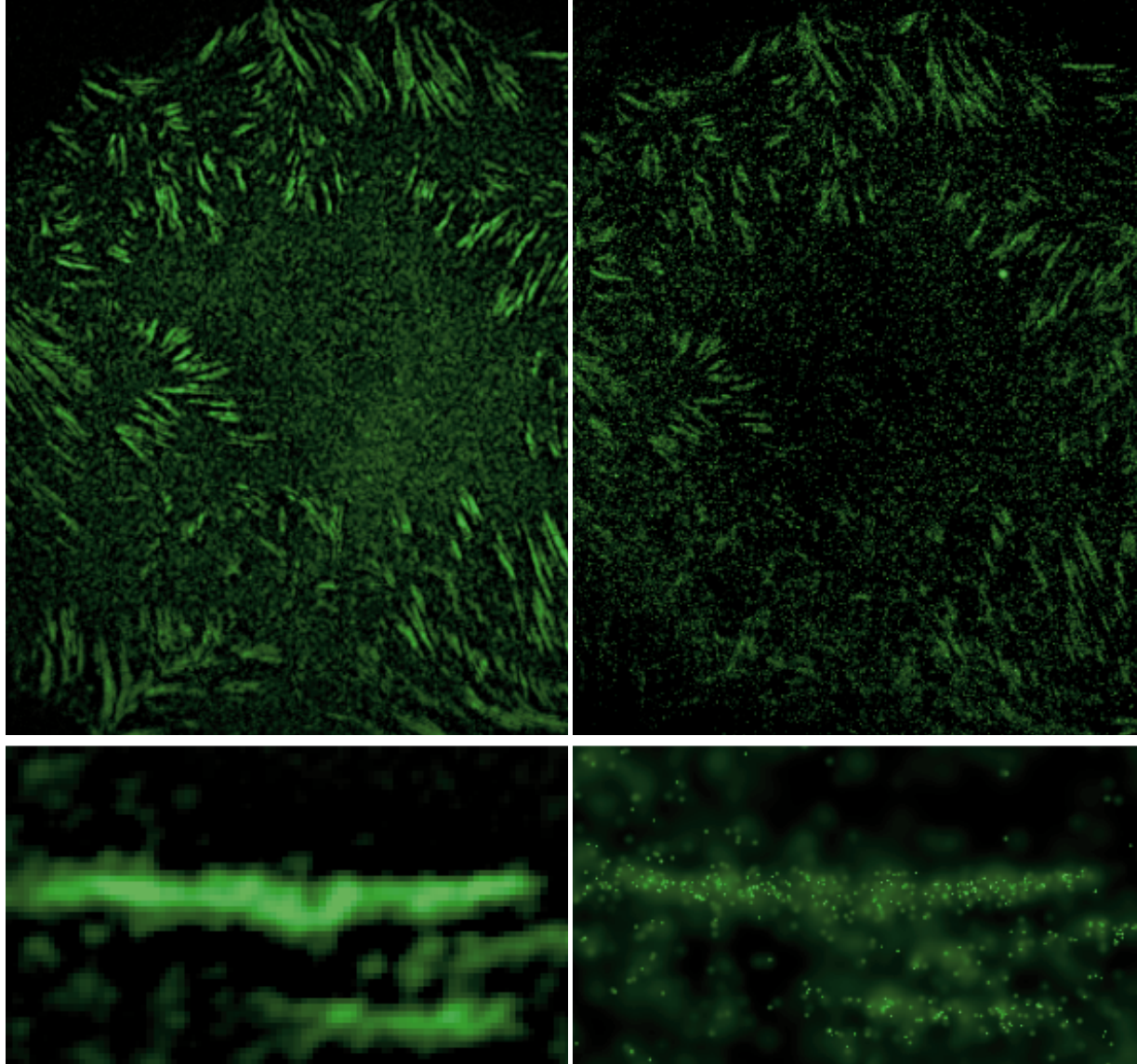
ELYRA PS.1 is the ideal tool that delivers maximum flexibility without sacrificing image quality in SR-SIM and PALM:

- ELYRA PS.1 is a superresolution illumination and detection platform integrating SR-SIM, PALM and laser widefield observation. All of these technologies share the same laser module, optics, electronics and software.
- It combines the flexibility of SR-SIM with the breathtaking resolution gain and inherent single molecule analysis of PALM.
- ELYRA PS.1 features two EMCCD cameras dedicated to either SR-SIM or PALM for uncompromised performance in both methods.
- You can switch methods even during the course of an experiment. Carl Zeiss offers several objectives that are great for both SR-SIM and PALM imaging.
- Combine it with the optional LSM 710 or LSM 780 for the full spectrum of modern confocal imaging.

... and when you do superresolution work, what can be better than to have the gold standard in confocal sensitivity for comparison?

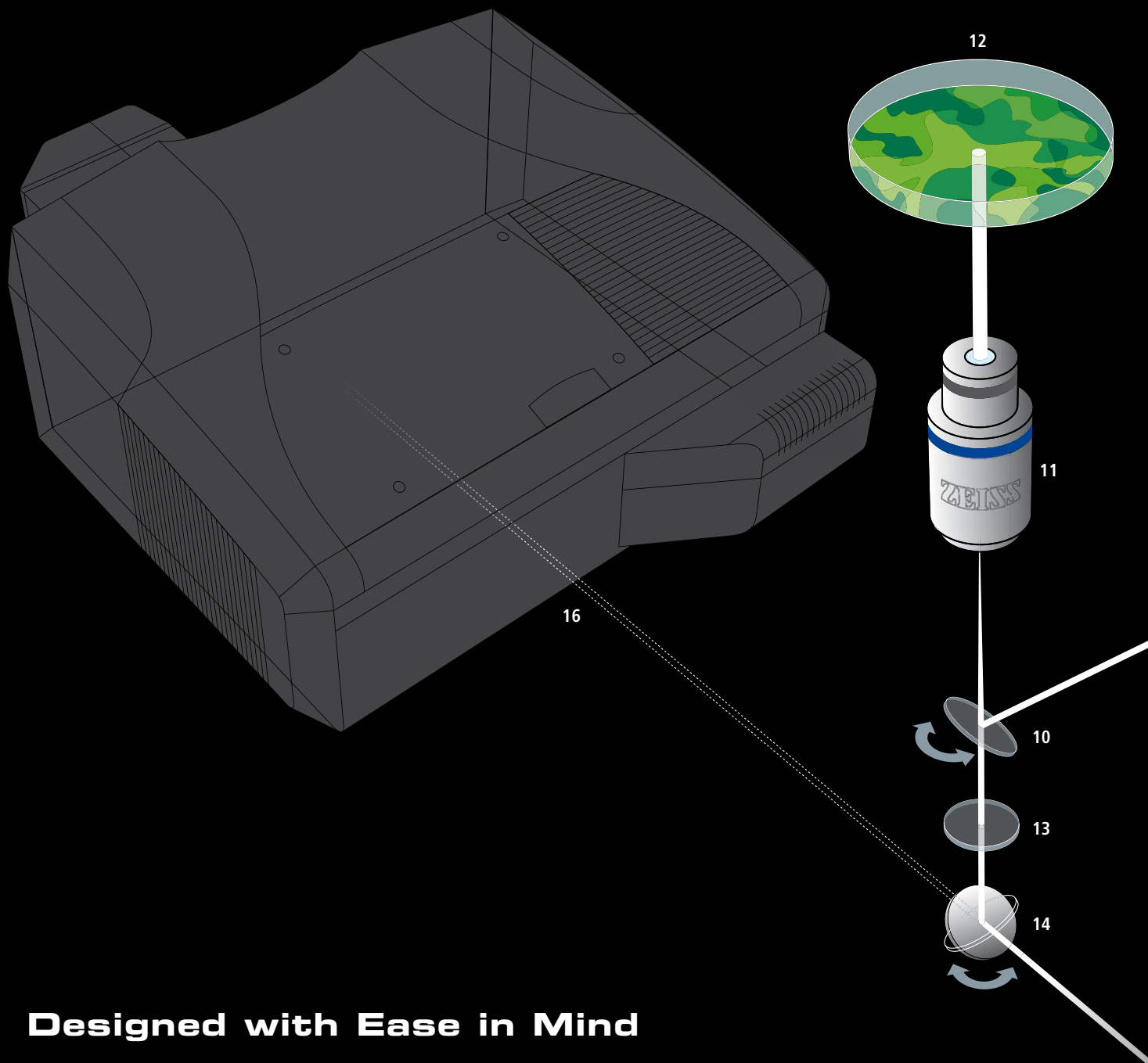
ELYRA PS.1 is a true platform concept, a great companion in the superresolution world that offers almost unlimited possibilities. All that, and when you compare its price to the value it adds to your investment, you will have another pleasant surprise in store.

*Consecutive SR-SIM and
dSTORM images of focal
adhesion components stained
with Alexa488.
Author: Martin Bastmeyer,
University of Karlsruhe,
Germany*



*ELYRA PS.1 configured with
LSM 780*





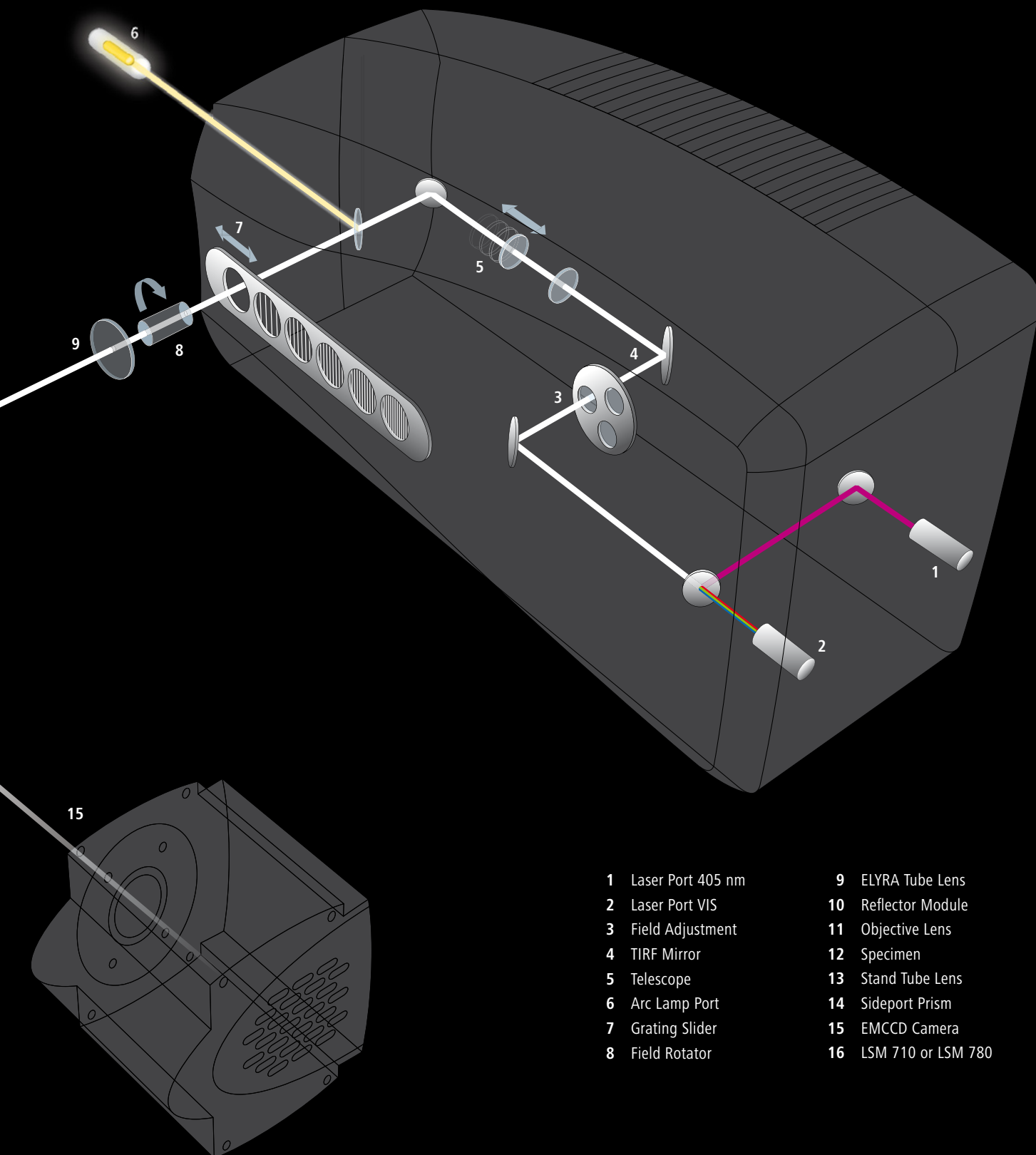
Designed with Ease in Mind

The ELYRA beampath design combines laser TIRF and structured illumination in a single instrument. While PALM and SR-SIM are each extremely valuable tools, the experiments conducted to elucidate complex biological questions often require the use of several imaging techniques. With this in mind, the optics concept of ELYRA accommodates all elements for both techniques in a single head unit.

The excitation light enters the microscope at the rear port. For TIRF imaging, a motorized mirror ensures convenient and repeatable adjustment of the TIRF angle.

The SR-SIM group allows for single click grating exchange to optimally match grating frequency to wavelength. Of course, regular (widefield) fluorescence microscopy can still be performed too. Specially aligned filter cubes ensure uncompromised optical quality along the entire beam path.

This arrangement leaves both side ports of the microscope stand free for other devices. In addition to one or two EMCCD cameras, ELYRA can therefore be combined with a laser scanning microscope (LSM 710 or LSM 780) on the same stand.



- | | |
|---------------------|-----------------------|
| 1 Laser Port 405 nm | 9 ELYRA Tube Lens |
| 2 Laser Port VIS | 10 Reflector Module |
| 3 Field Adjustment | 11 Objective Lens |
| 4 TIRF Mirror | 12 Specimen |
| 5 Telescope | 13 Stand Tube Lens |
| 6 Arc Lamp Port | 14 Sideport Prism |
| 7 Grating Slider | 15 EMCCD Camera |
| 8 Field Rotator | 16 LSM 710 or LSM 780 |

Apply

Filter

Linear unmixing
Ion Concentration
Correlation
Modify Series
HDR- imaging
Stitch
Palm
Palm
Remove Palm outliers

Input image tdEOS_Pax_CLC2_online_cut

Select

Output Image tdEOS_Pax_CLC2_online_cut_Palm

Settings

Default

Channel

TV

Peak Finder

☐ discard overlapping

Peak mask size

9

pixel

Peak intensity to noise

6.0

Localizer

Fit Model

x,y 2D Gauss Fit

tdEOS_Pax_CLC2_on...

2D

Gallery

2.5D

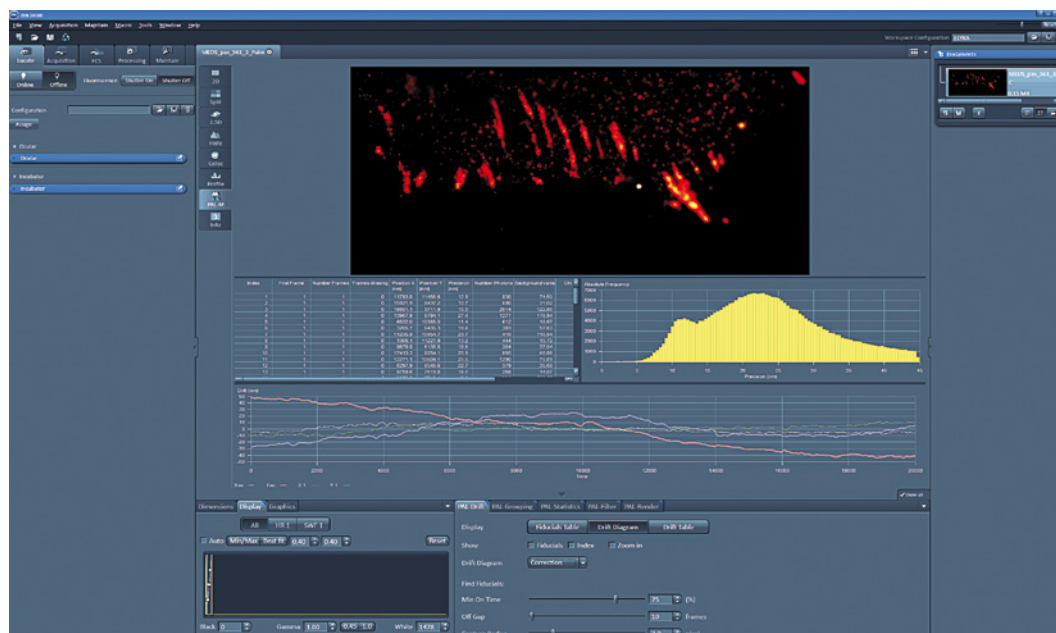
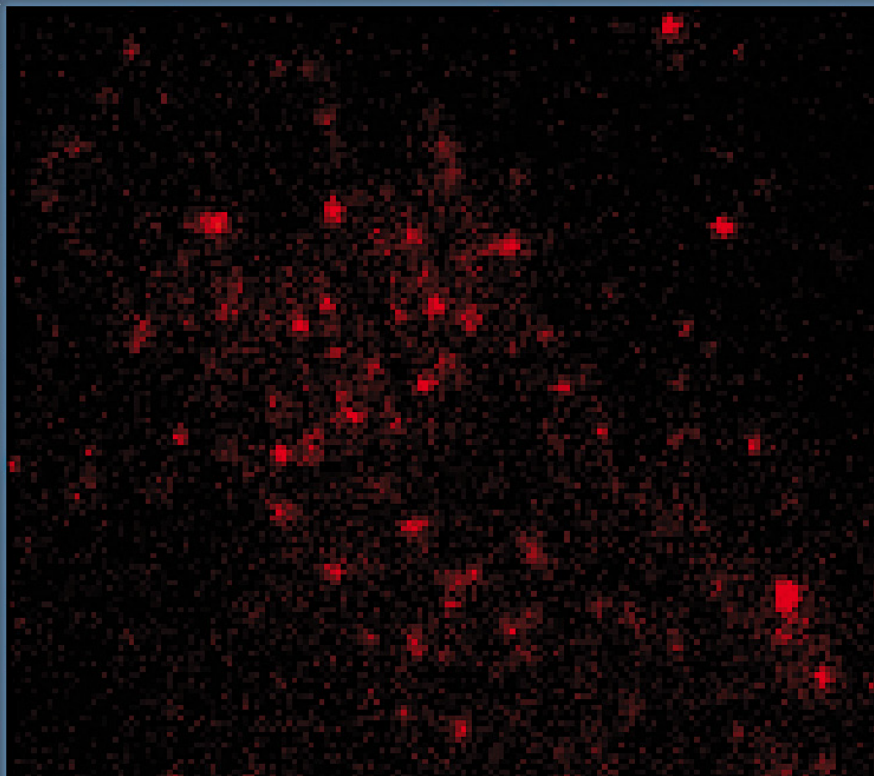
Histo

Profile

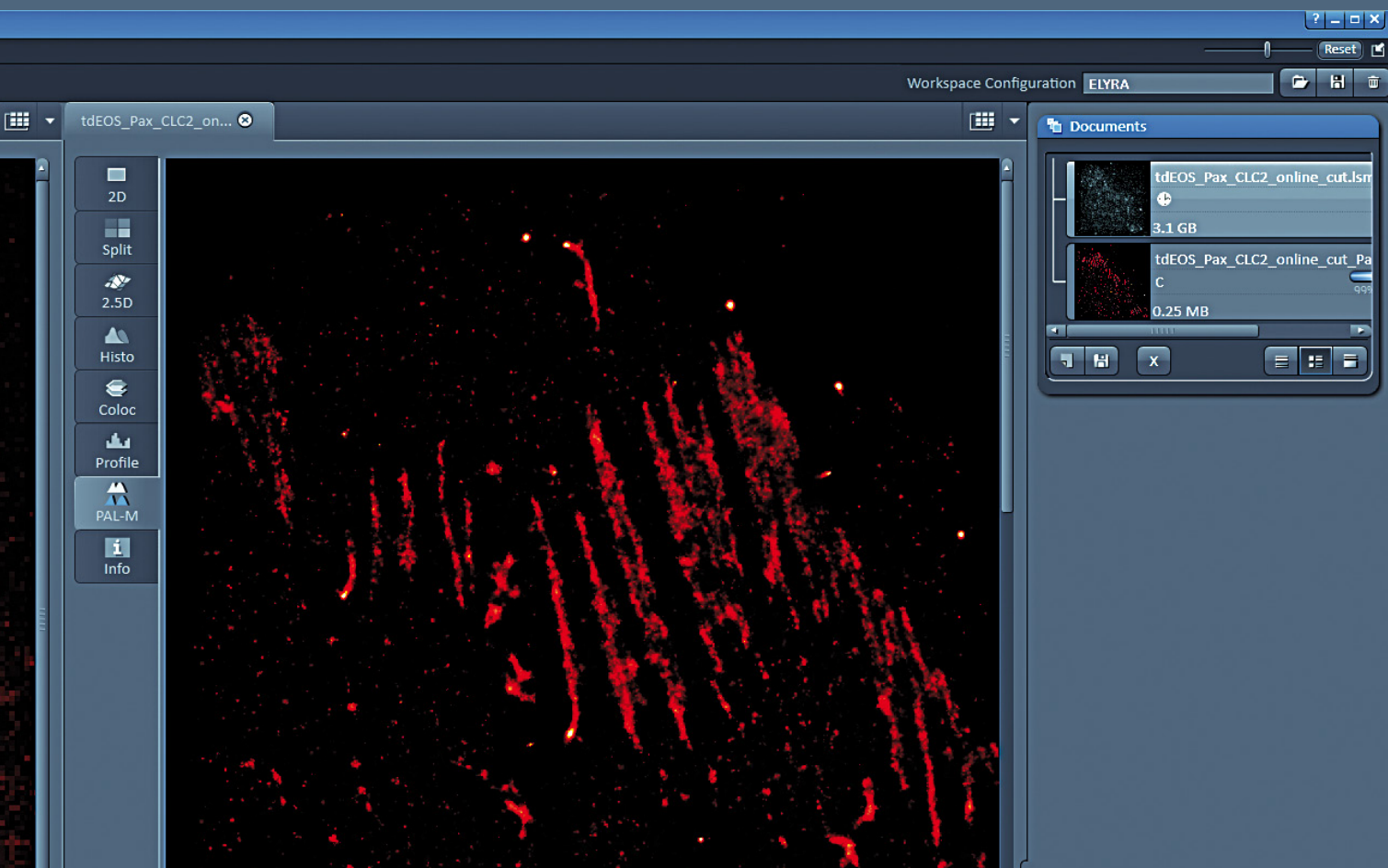
Mean ROI

Preview

Info



Feature rich
rendering of PALM
data with ZEN.



ZEN Software: Efficient Navigation Beyond the Diffraction Limit

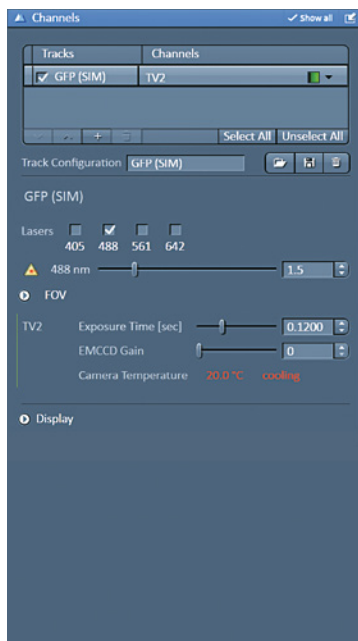
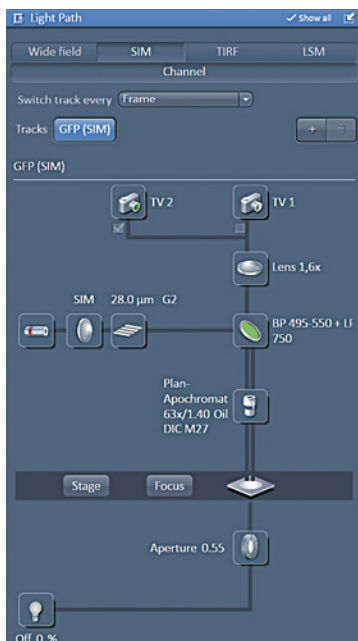
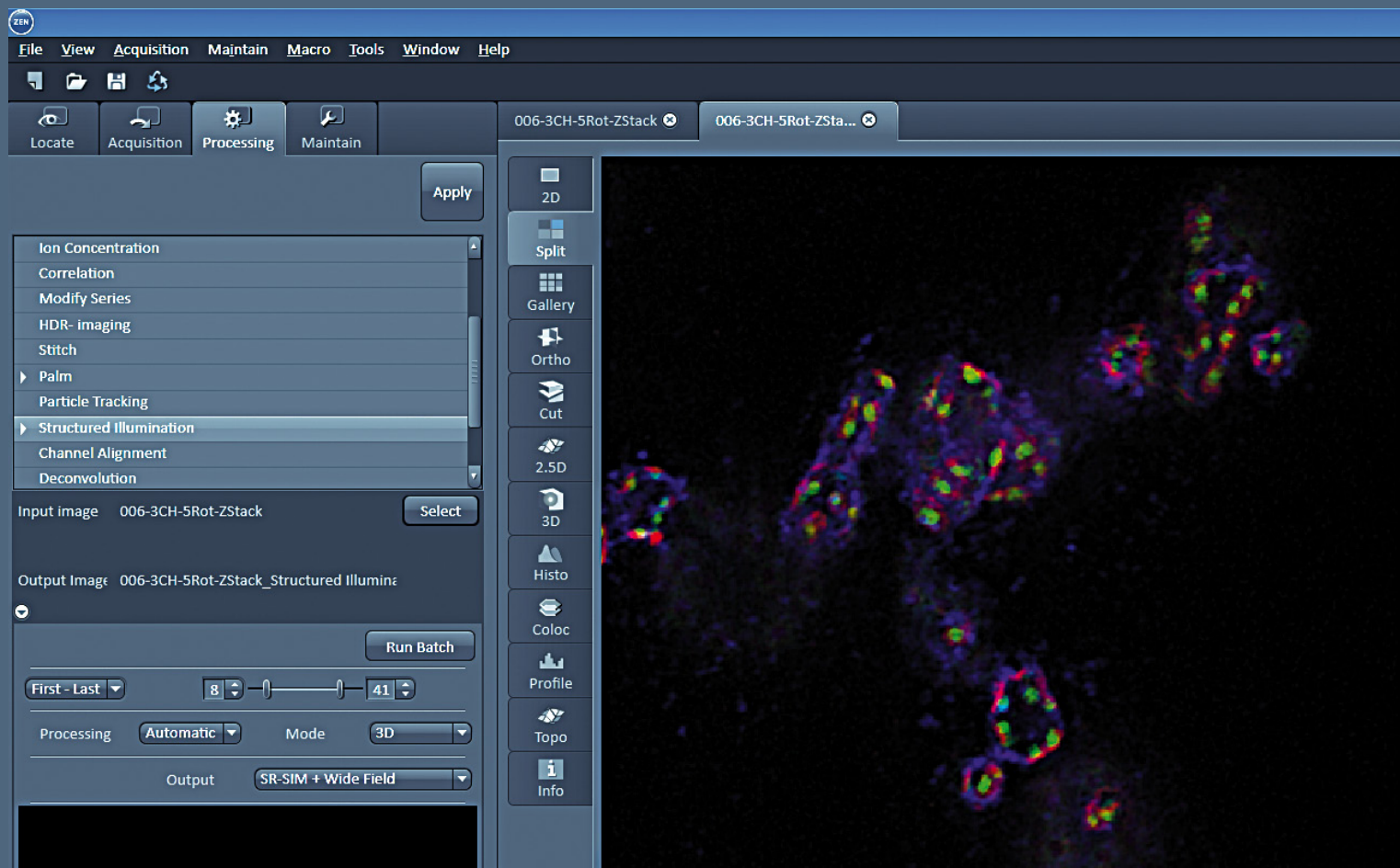
ZEN, the powerful software driving both the ELYRA PS.1 and LSM 7 series from Carl Zeiss, combines state-of-the-art technology with an interface that is so intuitive you can remain fully focused on your research.

The powerful ZEN software has received world-wide recognition for both versatility and ease of use. Already renowned for its performance with our LSM 7 series of confocal microscopes, this powerful engine is now put at your disposal in the ELYRA S, P, and PS Combi-Systems.

ZEN is designed for primarily dark laboratories, presenting a well-ordered yet minimalist interface that is a pleasure to use. It makes all of the features of the LSM 710 and LSM 780, wherever applicable, available on ELYRA PS.1 systems.

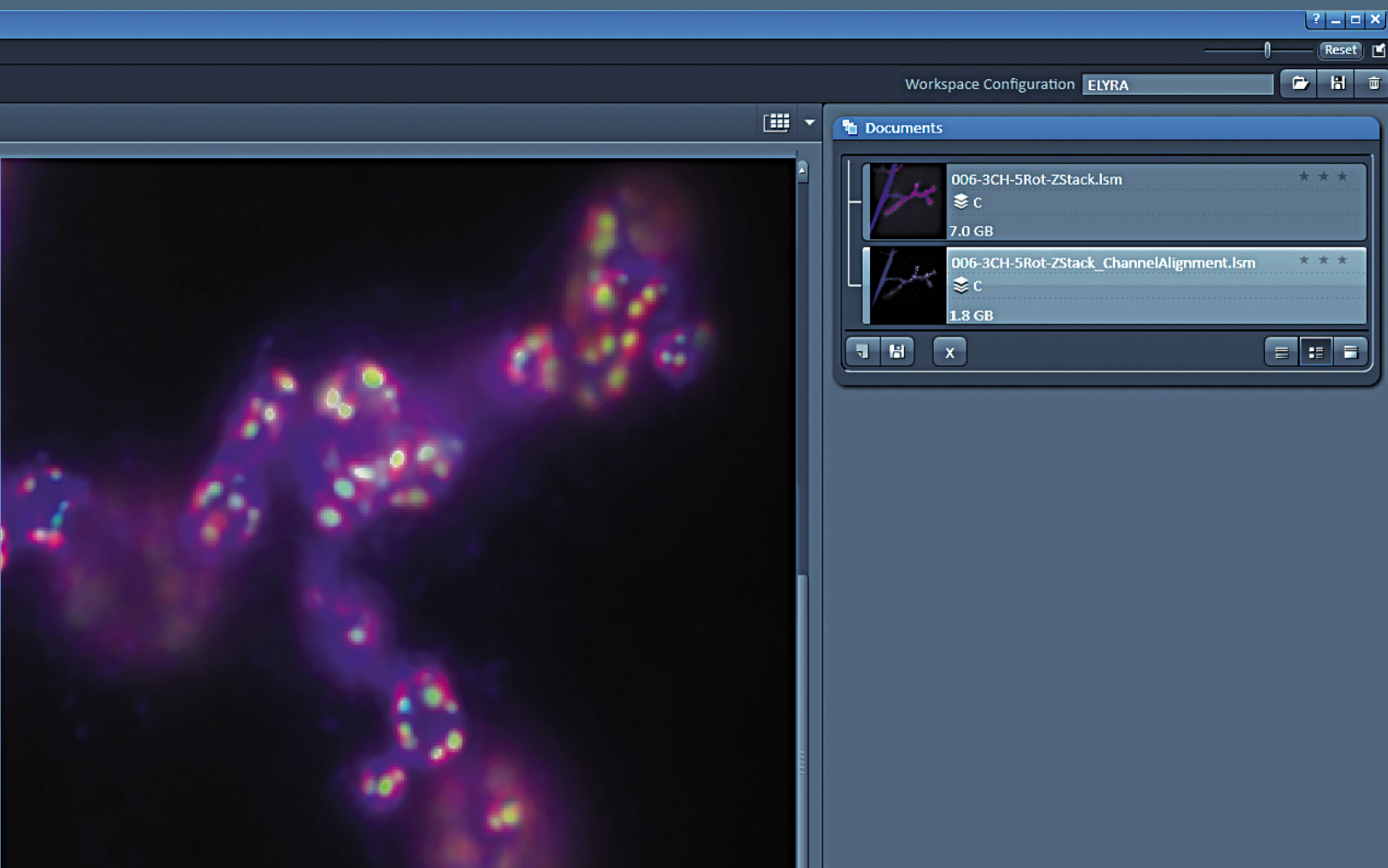
The new version of ZEN running on 64-bit high-end computers provides the necessary power to drive the systems and perform the advanced computation and data handling of the large image files that are created in PALM and SR-SIM. Offline stations for data processing are also available.

What's more, with one superb software package driving all SR-SIM, PALM and LSM, it is as simple as a click of the mouse to switch between methods and imaging modes without re-booting.



Comfortable configuration of all motorized system functions with ZEN

Seamless integration of super-resolution features into acquisition and processing commands



ZEN Software Features

PALM

Acquisition:

- Full software control of laser power, TIRF angle and field telescope for comfortable setup.

Processing:

- ZEN software support for fiducials, drift correction, color alignment, display, and easy handling of all result data such as molecule density.
- Drift and chromatic aberration correction means the system can measure and correct sample drift with standard positional and color fiducials – for example, colloidal gold.

SR-SIM

Acquisition:

- ZEN offers easy setup of multicolor experiments, with versatile imaging modes and ideal gratings for each laser line – exchangeable during multicolor experiments for maximum gain in resolution.
- You can choose the number of rotations of the grids during acquisition to optimize speed or resolution.

Processing:

- Advanced and robust algorithms (developed in association with R. Heintzmann, Kings College, UK) enable calculation of the superresolution images with easy setup of the calculation parameters.
- Choose between automatic and manual selection of processing parameters for maximal flexibility.
- Batch processing function available.
- Drift and chromatic aberration correction.

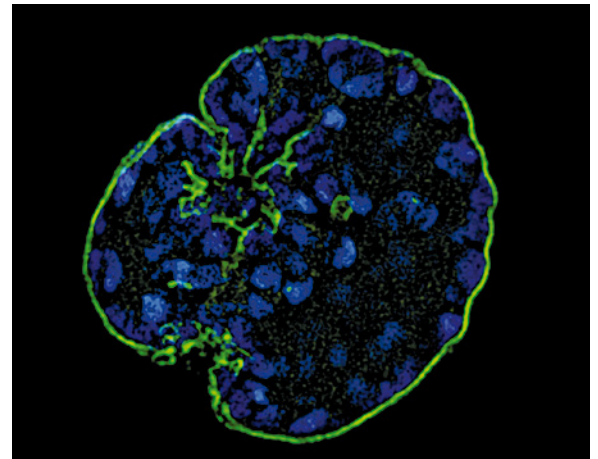
Two Powerful Enabling Technologies ...

SR-SIM: Superresolution structured illumination microscopy brings you up to twice the gain in resolution in all dimensions – without compromising on dyes, and without special sample treatment.

Resolving small structures corresponds to detecting high spatial frequencies in your sample. A simple fundamental relationship exists between the resolving power of an optical system (for example, the objective of a light microscope) and the frequency it can transmit, with the resolution limit corresponding to the highest frequency that passes the system – that is, the finest pattern.

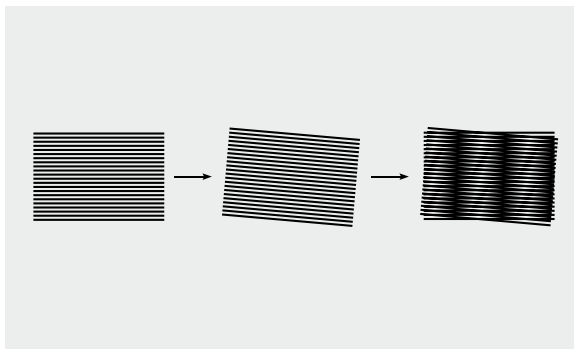
But what if there was a way to tune these frequencies? Suppose you could transform undetectable fine patterns into detectable coarser patterns? If you could then re-tune the detected signal to its original frequency, you would have an elegant way to enhance the resolving power of the system.

This is exactly the approach we take with SR-SIM. It relies on the Moiré effect that occurs when two patterns are superimposed and a new, coarser pattern emerges. The mathematical relationship between the three images is such that if you know any two of them, you can calculate the pattern in the third. This is almost exactly how SR-SIM reconstructs a superresolution image. To illustrate, consider the two grids in image 1. When your fluorescence sample (corresponding, say, to grid1) is overlaid with a very fine and precise light pattern (grid 2), it yields a Moiré image on the camera chip (on the right). From the camera image

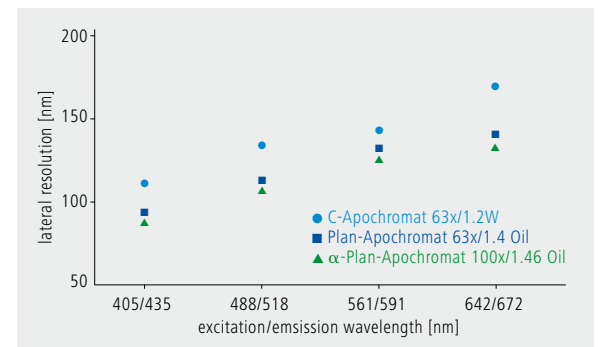


SR-SIM image of mouse nucleus in early stage of cell division with staining of DNA (blue) and nuclear lamina (green).
Author: Lothar Schermelleh, LMU Munich, Germany

and the known pattern, the original image of your sample can then in principle be reconstructed with a simple algorithm. However, a complication arises in that the patterns in your sample can have any form and orientation so, for a successful reconstruction, the sample has to be scanned with the pattern in different positions. Typically, the pattern is turned three to five times over a full circle, and shifted laterally three times or more at each turn.



Moiré patterns formed by superimposed grids.



Relationship between the lateral resolution limit and the excitation/emission wavelength in SR-SIM. Theoretical values are plotted for different combinations of wavelength and objective lenses (each with the optimal grid selected).

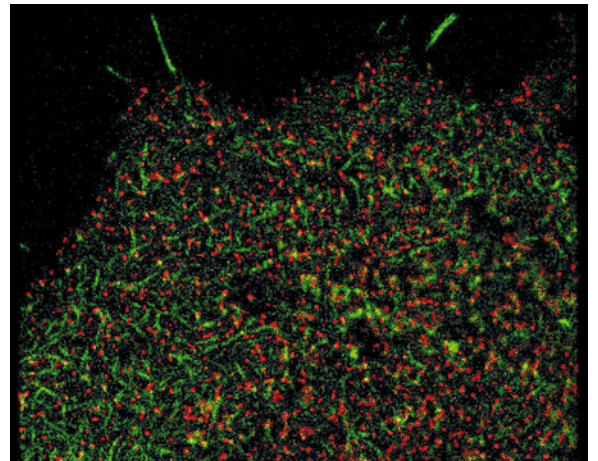
... Dedicated to Superresolution Microscopy

PALM: Photoactivated Localization Microscopy brings you up to an unprecedented 10-fold increase in lateral resolution.

Photoactivated localization microscopy lets you see single fluorescent molecules switching between an “on” and “off” state online, leading to imaging resolutions of ~20-30 nm. Suitable fluorophores are already plentiful and still expanding. They include fluorescent proteins that can be photo-activated or photoswitched (for example, PA-GFP or EosP) as well as many organic dyes.

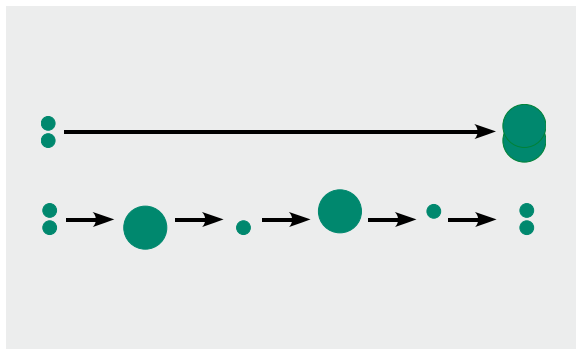
PALM achieves tremendous resolution improvements by combining these special fluorophores with the principle of localization microscopy. In a diffraction-limited optical system, every point-like object is imaged as an extended spot – the so-called Point Spread Function (PSF) in a light microscope. If two such objects come close enough, their PSFs will overlap heavily, making it impossible to determine their precise localization, let alone see them as separate entities. This case is illustrated in the top half of the figure below.

But imagine you could view only one at a time. Suddenly you would be able to determine the centers of the PSFs. They can be localized to a much higher precision than the PSFs themselves, and with the appropriate algorithms this can be done simultaneously with raw data acquisition (see lower half of figure). That’s all that is done with PALM. Fluorescent molecules that can be switched between an “on”

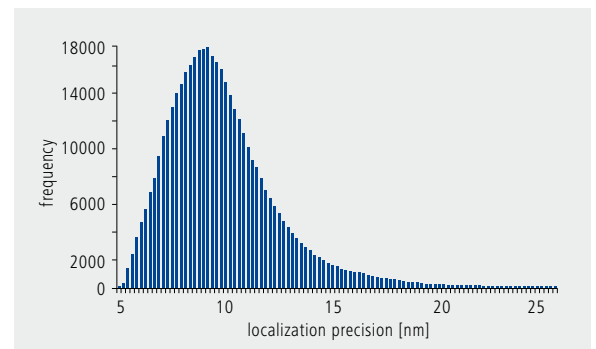


PALM image of LifeAct (green) and Glut4 (red) fusion proteins expressed in cultured cells. Author: William Hughes, Garland Institute; Imaging: Katharina Gaus, University of New South Wales, Australia

and an “off” state are illuminated in such a way that only a few are activated in every image frame, ensuring that their PSFs do not overlap. After registration, these molecules are switched off, while new ones are activated and so it continues.



Sequential localization measurements result in higher effective resolution.



Distribution of localization precision obtained from a PALM experiment using tdEOS as the fluorescent tag.

ELYRA Superresolution Platform

Technical Data

Microscope	
Stand	Axio Observer.Z1 SR, fully motorized inverted microscope stand for superresolution microscopy; motorized XY scanning stage 130x100 DC; fast Z-piezo insert for XY scanning stage (sample holders available for standard 3"x1" slides and 36 mm glass-bottom dishes)
Optical Filters for SR-SIM and PALM	
Filter sets	Five exchangeable filter sets available for multi-channel SR-SIM and PALM; each filter set with four precisely mounted ACR-coded ⁽¹⁾ filter modules for superresolution microscopy on a motorized six-position turret; two positions in each turret compatible with standard "push & click" filter modules (e.g. for visual sample observation)
Filter slider	Manual filter slider with two positions (for emission filters or a Bertrand lens); fits into camera adapter of the microscope's side port; emission filters exchangeable for customizing detection conditions.
Lasers	
Laser module	Laser module for ELYRA P.1, ELYRA S.1 and ELYRA PS.1; laser coupling with polarization-maintaining single mode fiber (no adjustment of laser coupling by users required).
Laser lines	Up to four laser inserts; all lasers of maintenance-free diode or solid-state type (without significant heat dissipation); laser lines: 405nm (50mW), 488nm laser (100mW), 561nm (100mW), 642nm laser (100mW); AOTF-based intensity control of all laser lines; additional high dynamic attenuation of the 405nm line for precise fluorochrome activation/switching in PALM
Cameras	
Camera for PALM	Andor iXon 897 back-thinned EMCCD camera; pixels: 512 x 512; pixel size: 16 µm x 16 µm; QE: 90% (camera specifications by Andor)
Camera for SR-SIM	Andor iXon 885 EMCCD camera; pixels: 1004 x 1002; pixel size: 8 µm x 8 µm; QE: 65% (camera specifications by Andor)
Transmitted IR light detection	Camera for transmitted infrared (IR) light detection: AxioCam MRm Rev. 3 FireWire; pixels: 1388 x 1040; pixel size: 6,45 µm x 6,45 µm; camera mounted to front port of microscope)
ELYRA P.1	
Illumination module	Fully motorized total internal reflection (TIRF) illumination; simultaneous TIRF illumination with VIS and 405nm laser lines; individual triggering of lasers for synchronizing dye activation and illumination to camera read and transfer times; motorized TIRF angle adjustment; motorized TIRF field adjustment with three field size options.
Cameras	Camera for PALM: Andor iXon 897 back-thinned EMCCD camera (mounted to side port of microscope) Camera for transmitted IR light detection: AxioCam MRm Rev. 3 FireWire (optional; not available in combination with LSM 710 or LSM 780; camera mounted to front port of microscope)
Imaging modes	"Widefield" mode (sample illumination with X-Cite 120), "TIRF" mode (TIRF, PALM and widefield using lasers for sample illumination), "LSM" (available if ELYRA P.1 is combined with LSM 710 or LSM 780)
Objective lenses (PALM)	alpha "Plan-Apochromat" 100x/1,46 Oil DIC, alpha "Plan-Apochromat" 100x/1.57 Oil-HI DIC Corr, ACR(1) coding (optional)
Max. field of view (PALM)	51.1 x 51.1 µm (with alpha "Plan-Apochromat" 100x/1,46 Oil DIC, full chip recording)
Localization precision (PALM)	Typical localization precision for tDEOS: 20 nm (see page 19 for relationship between localization precision and photon statistics for single molecules)
Multi-color imaging (PALM)	Detection of up to two different fluorescent labels (sequential detection)
Acquisition speed (PALM)	TIRF (PALM) and widefield mode: up to 27 and 30 frames per second, respectively (full frame mode, 512 x 512 pixels); >100 frames per second in sub-array mode
Data recording and analysis (PALM)	Full software control of PALM imaging; software holding focus based on fiducial markers Online PALM processing for simultaneous data acquisition and analysis; manual editing of parameter settings for optimal results in PALM with different fluorophores; feature-rich rendering of PALM localization tables; export and import of localization tables for custom filtering; correction algorithms for lateral drift and chromatic aberration (based on fiducial markers).

⁽¹⁾ ACR (Automatic Component Recognition); ELYRA systems automatically recognize ACR-coded components and reveal their identity to the ZEN software.

ELYRA S.1				
Illumination module	Fully motorized SR-SIM imaging; five different grating frequencies for SR-SIM for optimal matching of illumination pattern to laser wavelength and objective lens; motorized exchange of gratings in multi-color SR-SIM; fast piezo actuated phase stepping of gratings; pattern rotation with adjustable number of angle steps (3 or 5 rotations).			
Camera	Camera for SR-SIM: Andor iXon 885 EMCCD camera (mounted to side port of microscope)			
Imaging Modes	"Widefield" modes for illumination with X-Cite 120 and lasers, "SIM" mode (three-dimensional SR-SIM), "LSM mode" (available if combined with LSM 710 or LSM 780)			
Objective lenses (SR-SIM)	"Plan-Apochromat" 63x/1.40 Oil DIC, "C-Apochromat" 63x/1.20 W Corr, alpha "Plan-Apochromat" 100x/1,46 Oil DIC, alpha "Plan-Apochromat" 100x/1.57 Oil-HI DIC Corr, ACR ⁽¹⁾ coding (optional)			
Resolution (SR-SIM)	Lateral resolution (XY): 120 nm, axial resolution (Z): 300 nm (typical experimental FWHM values with objective lens "Plan-Apochromat" 63x/1.40 Oil DIC, subresolution beads of 40 nm diameter and excitation at 488 nm); see page 18 for relationship between resolution, wavelength and optics.			
Multi-color (SR-SIM Mode)	Detection of up to four different fluorescent labels (sequential detection)			
Max. Field of view (SR-SIM)	79.60 x 79.44 µm (processed: 75.52 x 75.36 µm), full-frame recording (1004 x 1002 px) with "Plan-Apochromat" 63x/1.40 Oil DIC			
Acquisition speed (SR-SIM)	Image Format	Single SR-SIM Frame ⁽²⁾	Time Series ⁽³⁾ (10 SR-SIM frames)	Z-stack ⁽⁴⁾ (2 µm, 16 SR-SIM frames)
	1004 x 1002 px (full frame)	1.7 sec	17.1 sec	14.6 sec
	512 x 512 px (subarray)	1.4 sec	14.1 sec	9.6 sec
	256 x 256 px (subarray)	1.4 sec	13.6 sec	9.2 sec
⁽²⁾ 15 individual images recorded per SR-SIM frame (at three pattern rotations) ⁽³⁾ 150 individual images recorded without pausing representing 10 SR-SIM frames (same Z-level) ⁽⁴⁾ 240 individual images recorded corresponding to 16 SR-SIM frames at different Z-levels (spacing between Z-levels: 0.133)				
Data recording and analysis (SR-SIM)	Full software control of SR-SIM imaging; multitracking (sequential multi-channel data acquisition with freely configurable change of gratings, filters and excitation lasers between tracks); SR-SIM imaging in user-defined sub-array regions (ROI imaging); extension of imaged area possible with tile scanning and stitching. Automatic selection and manual editing of processing parameters; channel-specific settings of processing parameters in multi-channel data; selective processing of subsets of original data (subsets of Z-stacks, ROIs); batch processing; three types of output computed from original data (SR-SIM, widefield and deconvoluted); three processing modes for Z-stack data ("2D", "3D", "3D Large") correction algorithm for chromatic aberration; computation and viewing of Fourier transforms.			
ELYRA PS.1				
System information	ELYRA PS.1 integrates all imaging modes, hardware as well as software features of ELYRA P.1 and ELYRA S.1 (see above)			
Illumination module	Sample illumination in all widefield and superresolution modes by a single, highly integrated illumination module (with same set of lasers and a single ELYRA laser module)			
Cameras	Camera for PALM: Andor iXon 897 back-thinned EMCCD camera (mounted to side port of microscope) Camera for SR-SIM: Andor iXon 885 EMCCD camera (mounted to base port of microscope) Camera for transmitted IR light detection: AxioCam MRm Rev. 3 FireWire (optional; not available in combination with LSM 710 or LSM 780; camera mounted to front port of microscope)			
ELYRA PS.1 upgrades	ELYRA PS.1 upgrades possible with ELYRA P.1 and ELYRA S.1			
Combination with laser scanning microscope				
Combination with LSM	LSM 710 (systems with 2, 3 or 34 channel detection) and LSM 780 (32 channel GaAsP) with VIS lasers (including tuneable laser In Tune)			
LSM upgrades	ELYRA P.1, S.1 and PS.1 can be upgraded with LSM 710 or LSM 780; upgrade options with ELYRA are available for many LSM 710 and LSM 780 system configurations.			
Standard software (ZEN)				
Standard	ZEN software package (64-bit); operating system: Microsoft Windows 7 Ultimate Full software control of image data recording in all imaging modes (incl. widefield, superresolution and LSM modes); software-controlled switching between imaging modes; automated integration of different imaging modes into the same experiment; full software control of data recording (multi-channel imaging, time series, Z-stack); saving and restoring of user-specific configurations for data recording;			
Optional packages	VisArt plus for ZEN (sophisticated volume visualization); StitchArt plus for ZEN (extension of field of view by tile scanning and subsequent stitching of tiles with 2D and 3D data)			

ELYRA

Your Key to the Nanoworld

In Biosciences, superresolution microscopy opens up an entirely new window to the tiniest building blocks of cells.

Until now, light microscopy has been your most flexible tool yet you've always been limited to resolving structures around 200 nanometers. You want to know more and now, with ELYRA from Carl Zeiss, you will.

At the same time, ELYRA is an integral part of the tried and tested microscopy concept from Carl Zeiss. With an ELYRA system, you will add new methods to your imaging portfolio - without having to renounce the proven ones. Whether you need laser widefield, TIRF or advanced confocal methods like FRET or RICS - there is an ELYRA configuration for it.

	ELYRA P.1	ELYRA S.1	ELYRA PS.1
Widefield (excitation with lasers or X-Cite 120)	•	•	•
TIRF	•		•
SR-SIM		•	•
PALM	•		•
LSM 710 or LSM 780 (optional)	•	•	•

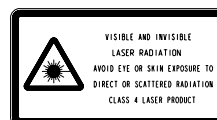
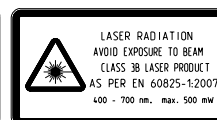
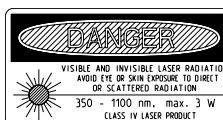
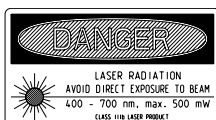
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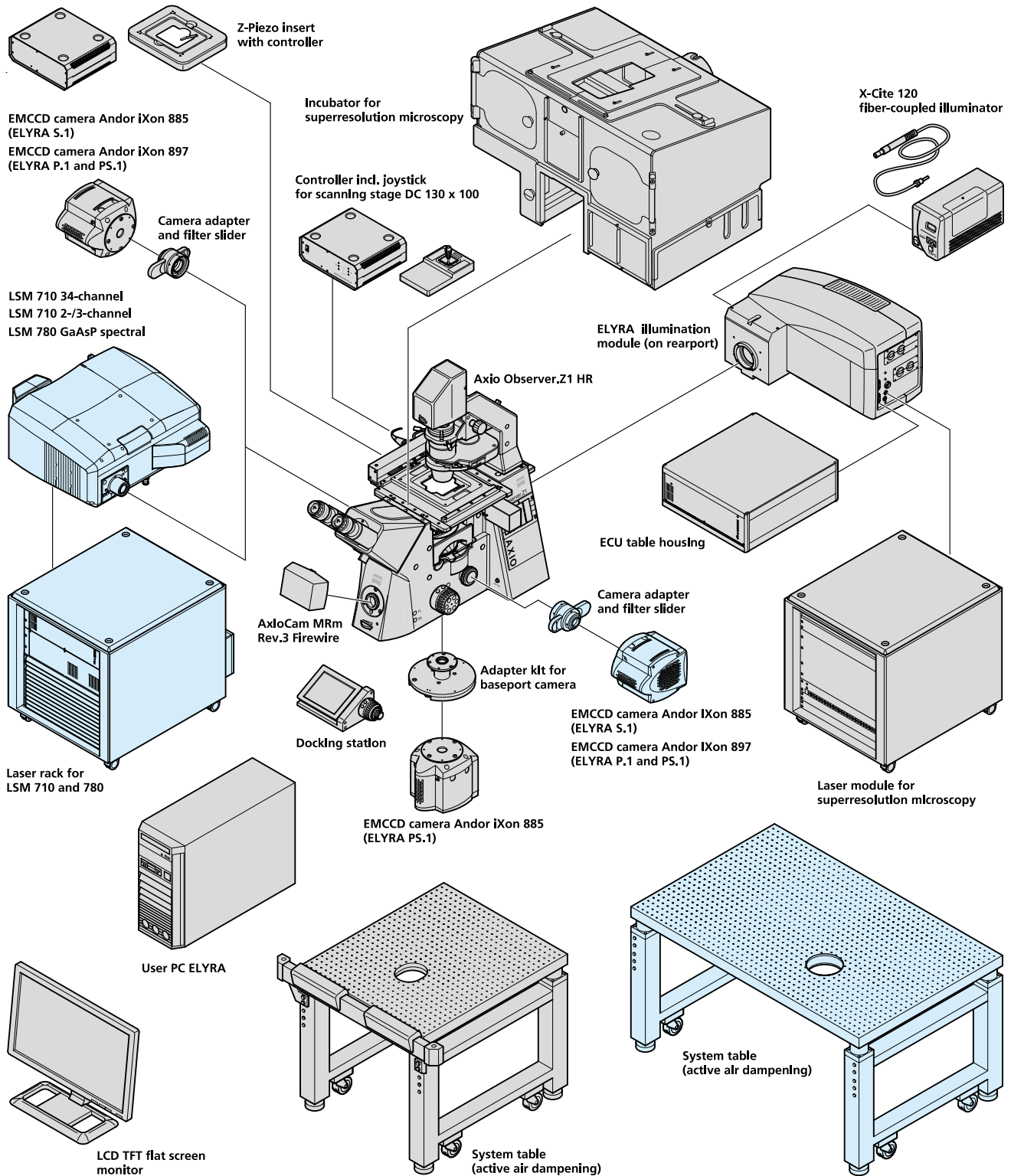
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Certifications



ELYRA

System Overview





Think. Envision. Observe. Understand

After more than 160 years of leadership in microscopy, now for the first time we have overcome the traditional limits of resolution to reach deep into new areas in cell biology.

Within the ELYRA product family from Carl Zeiss, you can opt for the highest possible resolution, for the quickest and most flexible choice of dyes. And importantly, you can also keep your options open with a universal high resolution platform that combines all of these attributes into a single, cost effective system.

ELYRA offers almost unlimited possibilities – indeed, only you can demonstrate how far you can advance your research with these outstanding tools.

Microscopy beyond the classical resolution limit with the ELYRA series by Carl Zeiss – the latest in technology, combined with reliability and user friendliness.

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