



# **Software Module Catalog**

for Light Microscopy

December 2018  
ZEISS





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## Availability

### Your Flexible Choice of Components

	ZEN desk blue edition	ZEN pro blue edition	ZEN system blue edition	ZEN lite
3Dxl	○	○	○	
Advanced Processing & Analysis	○	○	○	
Autofocus		○	●	
Colocalization	○	○	●	
Connect	●	●	●	
Correlative Array Tomography	○		○	
Counting				
Experiment Designer		○	○	
Extended Focus	●	○	●	
FCS				
FCS Enhanced				
FRAP				
FRET				
GPU	○	○	○	
Image Analysis	●	○	●	○
Macro Environment	○	○	○	
Manual Extended Focus		●	●	●
Motorized Extended Focus				
Photon Counting Histogram				
Physiology	○	○	○	
RICS				
ROI HDR				
Shuttle & Find		○	○	
Tiles & Positions		○	○	
Time Lapse		○	●	○
Z Stack		○	●	

- Included in ZEN
- Optional in ZEN



## Availability

### Your Flexible Choice of Components

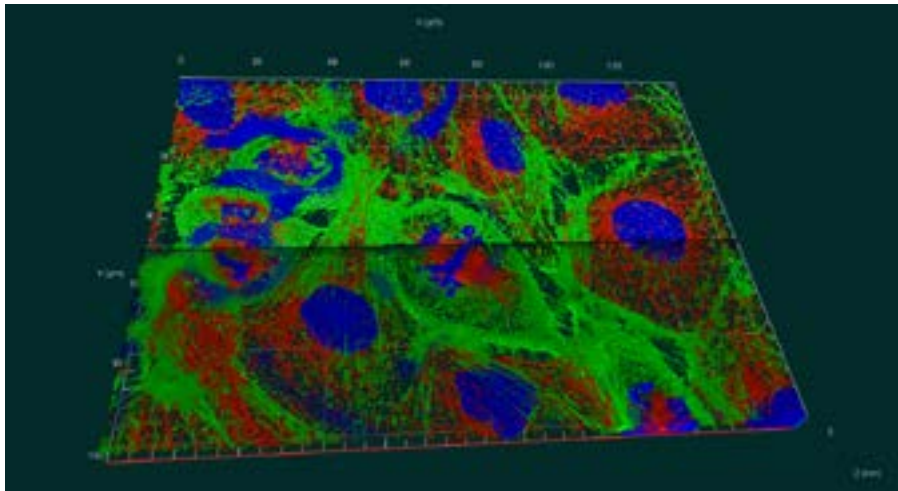
	ZEN desk black edition	ZEN system black edition	ZEN 2 core v2.5	ZEN 2 starter v2.5
3Dxl	●	●		
Advanced Processing & Analysis		●	●	
Autofocus		●	●	
Colocalization	●	●		
Connect				
Correlative Array Tomography				
Counting	●	●		
Experiment Designer	●	●		
Extended Focus	●	●		
FCS	●	●		
FCS Enhanced	●	●		
FRAP	●	●		
FRET	●	●		
GPU				
Image Analysis	●	●	●	●
Macro Environment			●	
Manual Extended Focus			●	●
Motorized Extended Focus			●	
Photon Counting Histogram	●	●		
Physiology	●	●		
RICS	●	●		
ROI HDR	●	●		
Shuttle & Find		●		
Tiles & Positions	●	●	●	
Time Lapse		●		
Z Stack		●		

- Included in ZEN
- Optional in ZEN



## 3Dxl for ZEISS ZEN Imaging Software

Efficiently Render Your Very Large 3D and 4D Image Stacks



*Ptk2 rat kangaroo epithelial cells, microtubuli: red, DNA: blue, Actin filaments: green. Widefield stack processed with 3D Deconvolution, rendered in mixed transparency/surface mode in 3Dxl. A clipping plane is set, to only clip the surface rendering to unveil the transparency rendering.*

Visualize and analyze 3D and 4D image data in fluorescence microscopy. 3Dxl features the artifact-free rendering of ray-tracing-based volume models (transparency), surface renderings and maximum intensity projection renderings. Generation and export of movies as well as tools for interactive 3D measurements are included.

This enables easy assessment of a wide variety of threedimensional data sets derived from 3D microscopes. It also facilitates the presentation of time resolved (4D) microscopy. 3Dxl is powered by technology from arivis and is optimized to handle data sets that are larger than Graphics memory.

### Highlights

- **Easy movies creation**  
Create movies of your data sets with advanced display options and fly through capabilities
- **Simplified operations**  
Use clipping planes to uncover the details in even very complex multi-label scenarios
- **Great rendering quality**  
Render movies of your time series in 3D and display 3D data sets with highest rendering quality
- **Elimination of rendering artifacts**  
Ensure improved performance without rendering artifacts, even when dealing with very large 3D and 4D image data sets

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with the 3Dxl option and benefit from efficiently rendered very large 3D and 4D image stacks.

As technical requirements may apply on some systems, please contact us to learn more about the 3Dxl upgrade and how your imaging will benefit from an upgrade:

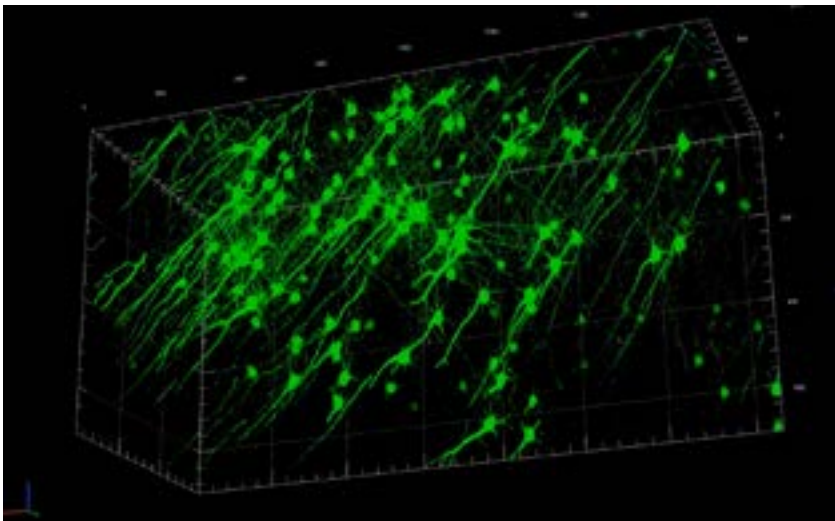
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





## 3Dxl for ZEISS ZEN Imaging Software

Efficiently Render Your Very Large 3D and 4D Image Stacks



Mouse brain, acquired with Axio Examiner.Z1 and LSM 800, rendered with ZEN imaging software and 3Dxl Viewer. Sample courtesy of T. Ruff, Max Planck Institute of Neurobiology, Martinsried, Germany

### Availability

The 3Dxl upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input checked="" type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN

Optional in ZEN

Not for therapeutic, treatment or medical diagnostic evidence. Not all products are available in every country. Contact your local ZEISS representative for more information.  
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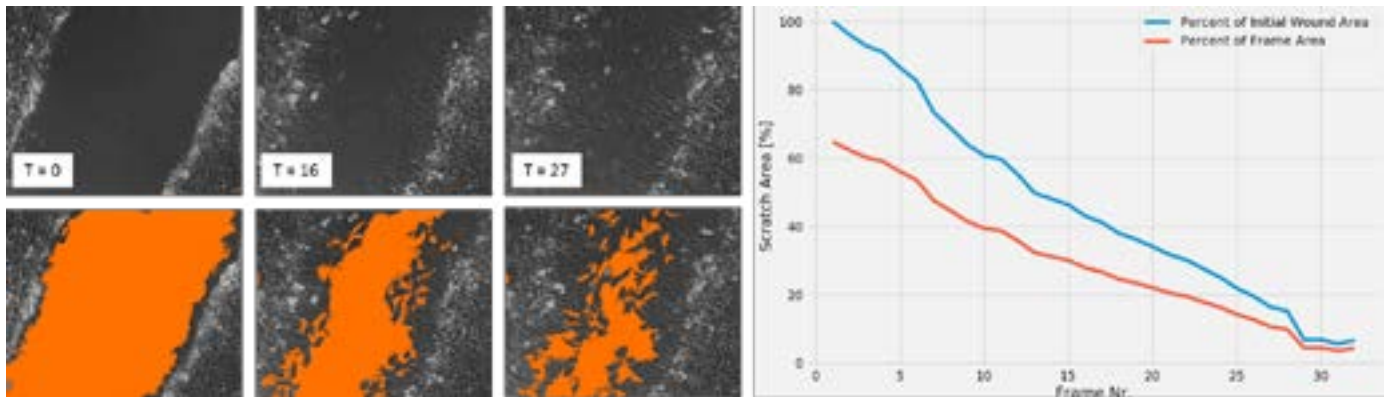
microscopy@zeiss.com  
www.zeiss.com/microscopy





## Advanced Processing & Analysis for ZEISS ZEN Imaging Software

Take Your Image Analysis Capabilities to the Next Level



Modify the experiment during the acquisition depending on results of the online image analysis or create online plots with external applications.

### Highlights

Extend the functionalities of your microscope by creating dynamic acquisition-experiments that allows you to automatically react on changes of your sample or other parameters on-the-fly. With this so-called Experiment Feedback you can monitor the status of the microscope and/or the sample to modify the experiment parameters during the acquisition accordingly. Increase integration time when the sample bleaches or stop the acquisition after a certain number of objects was detected. Experiment Feedback enables you to integrate certain tasks like data logging or starting of an external application directly into the ZEN experiment.

- **Experiment Feedback**  
Observe sample parameters during acquisition via online image analysis and flexible adjust hardware parameters on-the-fly using the adaptive acquisition engine
- **Online data displays**  
Create online displays of your results using external applications like Python, Matlab, etc.
- **Additional functionality**  
Benefit of additional image processing functions e.g. Edges, Arithmetics, Morphology, Segmentation and Binary

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Advanced Processing & Analysis for ZEISS ZEN Imaging Software and benefit from significantly enhanced processing and analysis capabilities.

As technical requirements may apply on some systems, please contact us to learn more about the Advanced Processing & Analysis upgrade and how your imaging will benefit from an upgrade:

[microscopy@zeiss.com](mailto:microscopy@zeiss.com)

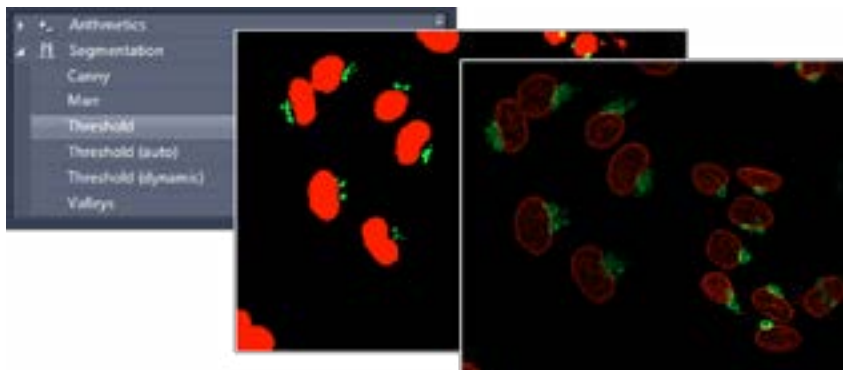






# Advanced Processing & Analysis for ZEISS ZEN Imaging Software

## Take Your Image Analysis Capabilities to the Next Level



Extend ZEN's image processing capabilities by additional functions.

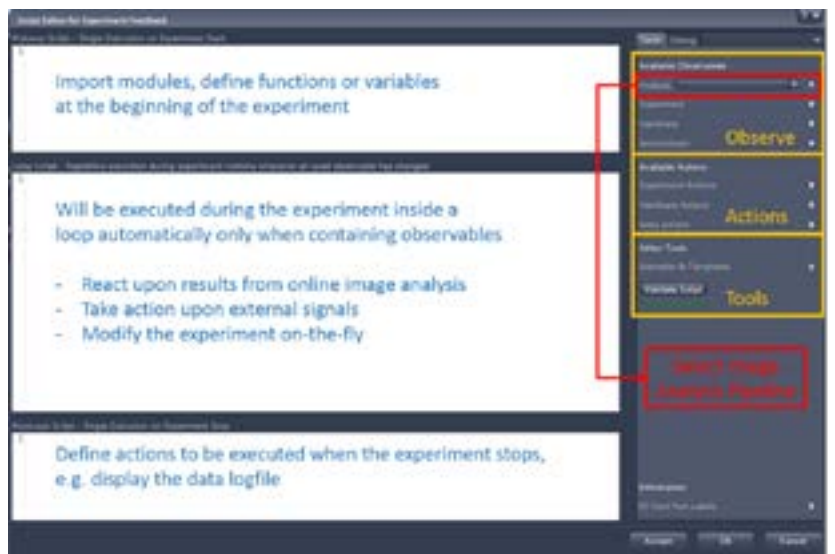
### Availability

The Advanced Processing & Analysis upgrade is available for the following software:\*

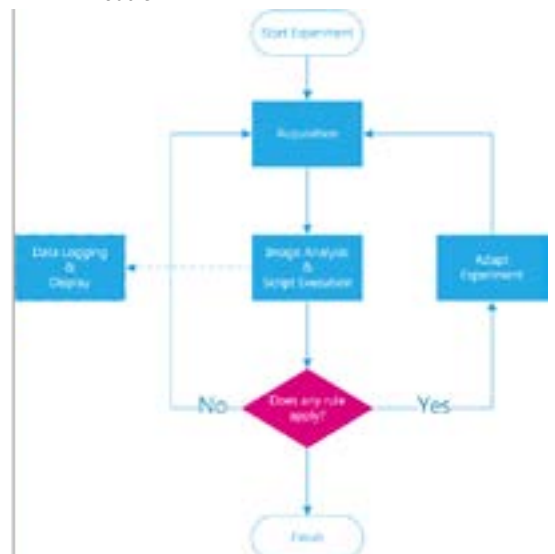
ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input checked="" type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN

\* The Advanced Processing & Analysis module requires the Image Analysis module.



Create and modify advanced experiments using the experiment feedback script editor.



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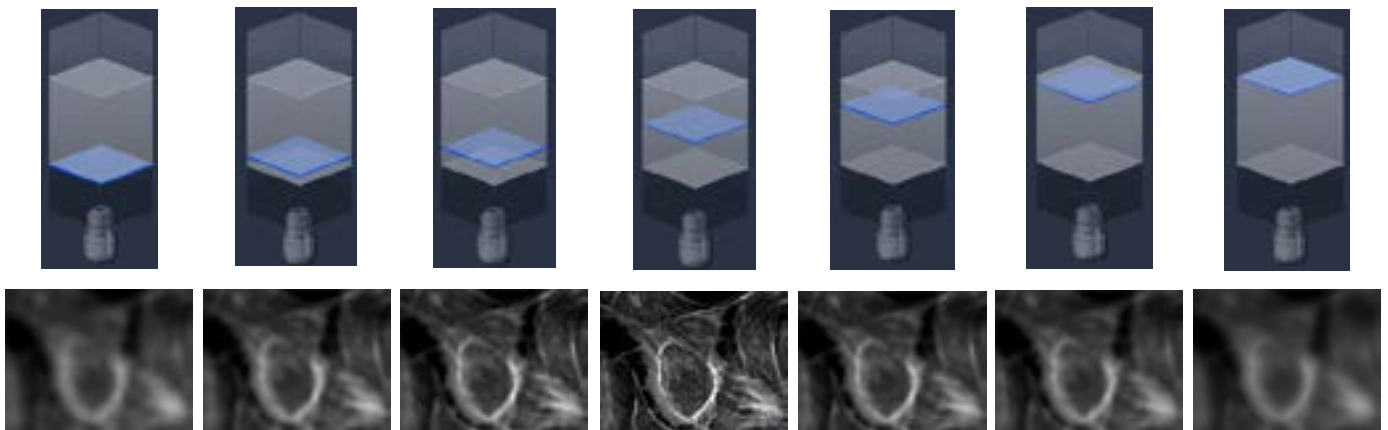






# Autofocus for ZEISS ZEN Imaging Software

## Easily Acquire Focused Images



Software autofocus module

### Highlights

With the Autofocus module for wide field systems you determine the required focus position for your specimen in transmitted light, reflected light and reflected light fluorescence.

ZEN determines the ideal position during your everyday work on the light microscope and is therefore trained continuously with regard to correct focusing. No calibration procedure is required for this and the focus is recorded automatically for all objectives and contrast techniques.

Additional advantage for you: in the case of images that are acquired over time or at different positions, the system continually refocuses automatically.

- **Automated settings selection**  
Have appropriate settings selected automatically dependent on hardware and objective
- **Image based autofocus**  
Determine automatically specimen focus in the field of view through image based autofocus
- **Choice of modalities**  
Choose between different imaging modalities e.g. transmitted light, fluorescence, or optical sectioning
- **Flexible combination of dimensions**  
Combine the Autofocus option seamlessly with other dimensions e.g. Multi Channel, Time Lapse etc.

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Autofocus for ZEISS ZEN Imaging Software and benefit from easily focused images.

As technical requirements may apply on some systems, please contact us to learn more about the Autofocus upgrade and how your process will benefit from an upgrade:

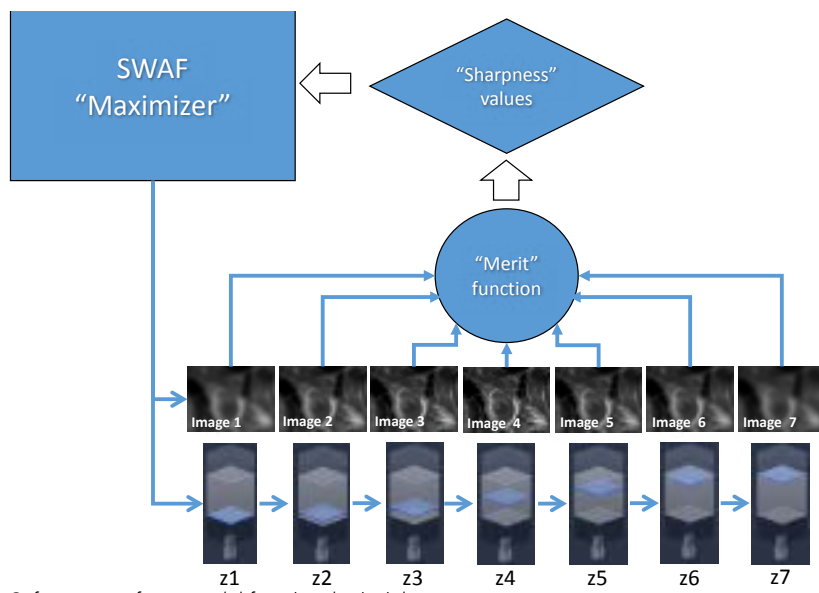
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# Autofocus for ZEISS ZEN Imaging Software

## Easily Acquire Focused Images



Software autofocus modul functional principle

### Availability

The Autofocus upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN

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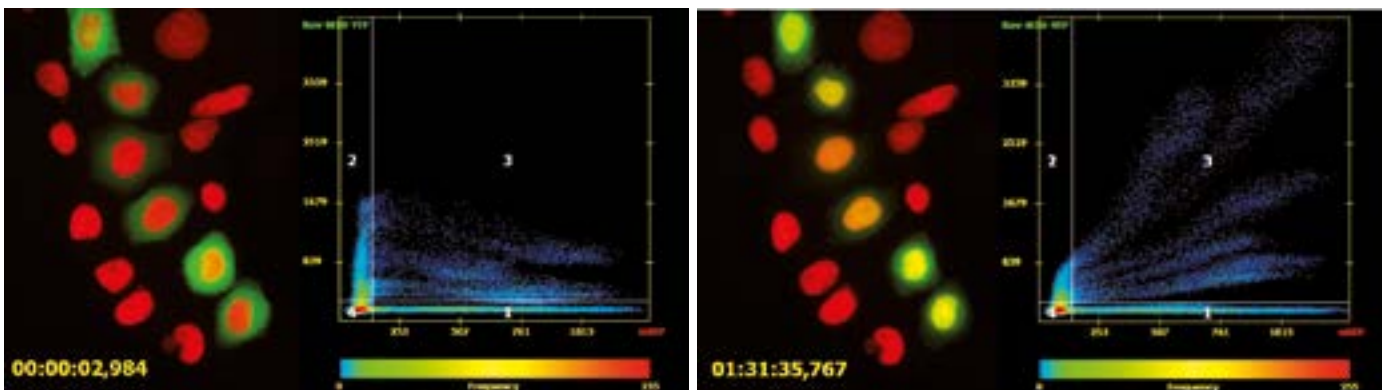
microscopy@zeiss.com  
www.zeiss.com/microscopy





## Colocalization for ZEISS ZEN Imaging Software

### Obtain Meaningful Results of Protein Colocalization



*Histone-2B-expressing HeLa cells, transfected with a cytoplasmically localized mutant of the HIV protein Rev: following treatment with a nuclear export inhibitor this Rev mutant relocates to the nucleus. The figure shows two time points, before and after treatment. The scatter plot clearly shows the increase in the colocalization of histone-RFP and Rev-GFP. Cell cultures: Prof. Ruth Brack-Werner.*

Use the Colocalization module to analyze the degree of overlap between two different fluorescence channels. To do this, the ZEN module employs established colocalization methods, such as the automated threshold value method of Costes, and the coefficients according to Pearsons and Manders. Obtain meaningful results on the colocalization of proteins as a scatter plot, image and data table. If you want to analyze certain areas of the image, simply mark the corresponding region directly in the image and study the scatter plot. ZEN then supplies the data both for the whole image and the selected regions. You can export your measured values in CSV format and process them further using a spreadsheet application.

#### Highlights

- **Quick quantitative information**  
Explore the amount of colocalization of two labeled structures in two channels of a multichannel fluorescence image
- **Reliable measurements**  
Obtain objective measurements of colocalization, independent of display parameters
- **Image processing**  
Extract colocalizing areas as new images for further processing
- **Ease of use**  
Receive great results with simple steps through easy to use tools

#### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Colocalization for ZEISS ZEN Imaging Software and benefit from meaningful results of protein colocalization.

As technical requirements may apply on some systems, please contact us to learn more about the Colocalization upgrade and how your imaging will benefit from an upgrade:

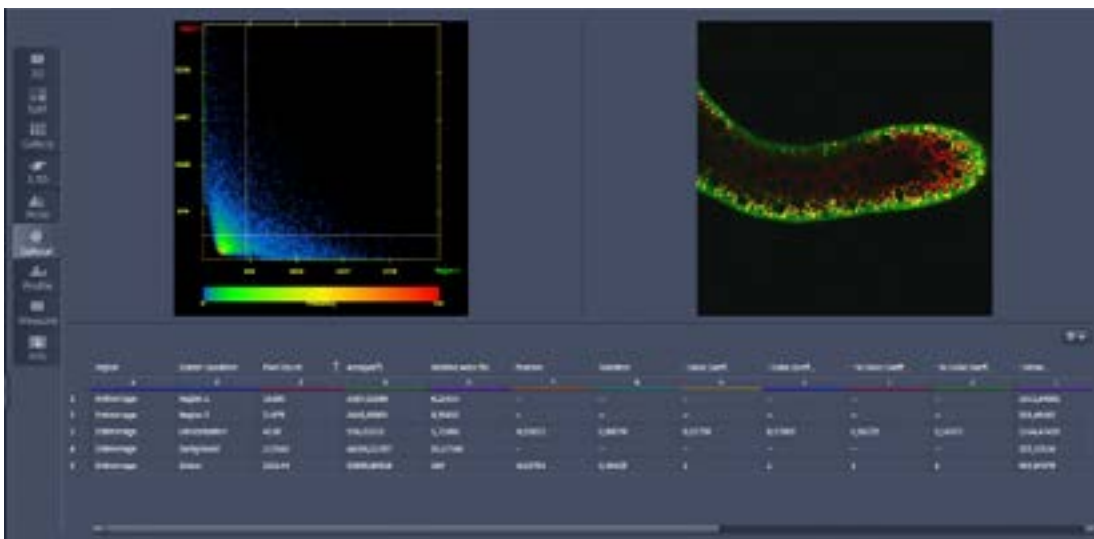
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# Colocalization for ZEISS ZEN Imaging Software

## Obtain Meaningful Results of Protein Colocalization



Colocalization-tab with ZEN (blue edition)



Colocalization-tool with ZEN (blue edition)

### Availability

The Colocalization upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input checked="" type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input type="radio"/>
ZEN system (black edition)	<input type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN

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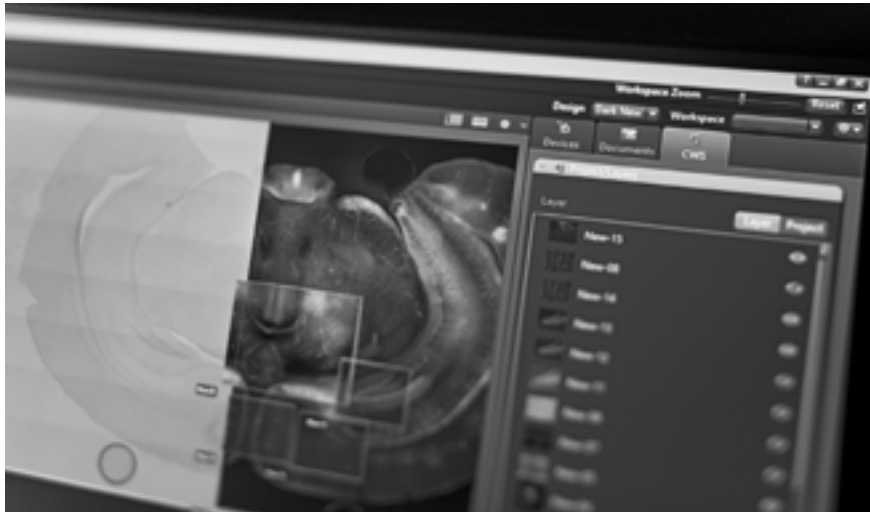
microscopy@zeiss.com  
www.zeiss.com/microscopy





## Connect for ZEISS ZEN Imaging Software

Discover New Insights by Connecting Information Across Dimensions



*ZEN Connect Interface showing Workspace menu.*

Imagine the possibilities when you can easily combine multiple perspectives of a sample - across scales, across modes of acquisition and across contrast techniques to provide answers to some of most complicated scientific questions. With ZEN Connect you can bring a whole portfolio of imaging technologies – ZEISS or non-ZEISS - together. Your multimodal data is automatically relocated and overlaid, and then stored in well-organized projects with intuitive image labels. As a result, you gain efficiency and effectiveness with intuitive data management, simplified workflows and limitless navigation.

### Highlights

- **Full data control**  
Profit from project based data storage and effortless image labelling
- **Intuitive data management**  
Move away from location centric data structure to an entirely sample centric organization and have a Google Maps-like display of all image data of a sample in one place
- **Simple sample workflows**  
Use standard sample formats without the need for special fiducials
- **Full Flexibility**  
Import images from 3<sup>rd</sup>-party microscopy vendors

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Connect for ZEISS ZEN Imaging Software and benefit from discovering new insights by connecting information across dimensions.

As technical requirements may apply on some systems, please contact us to learn more about the Connect upgrade and how your imaging will benefit from an upgrade:

[microscopy@zeiss.com](mailto:microscopy@zeiss.com)

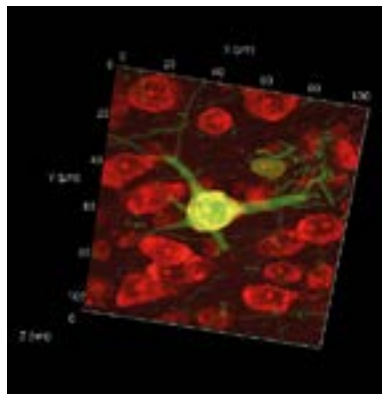
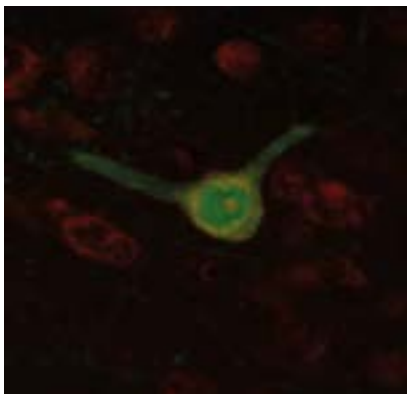






# Connect for ZEISS ZEN Imaging Software

Discover New Insights by Connecting Information Across Dimensions



Neurons of interest were first imaged with the standard confocal mode and then positions were restored using ZEN Connect and imaged for a second time with an Airyscan detector to improve resolution. Sample courtesy of Laurent Gelman, FMI, Basel



ZEN Connect Interface. Left hand side panel showing ZEN software menu. Center area showing the combined Connect image view. Right hand side panel showing Correlative Workspace Menu with Project/Layers tabs.

## Availability

The Connect upgrade is available for the following software:\*

ZEN pro (blue edition)	●
ZEN desk (blue edition)	●
ZEN desk (black edition)	
ZEN system (blue edition)	●
ZEN system (black edition)	
ZEN lite	
ZEN 2 core	
ZEN 2 starter	

● Included in ZEN    ● Optional in ZEN

\*The marked software include ZEN Connect Entry and can be optional connected with ZEN Connect Advanced

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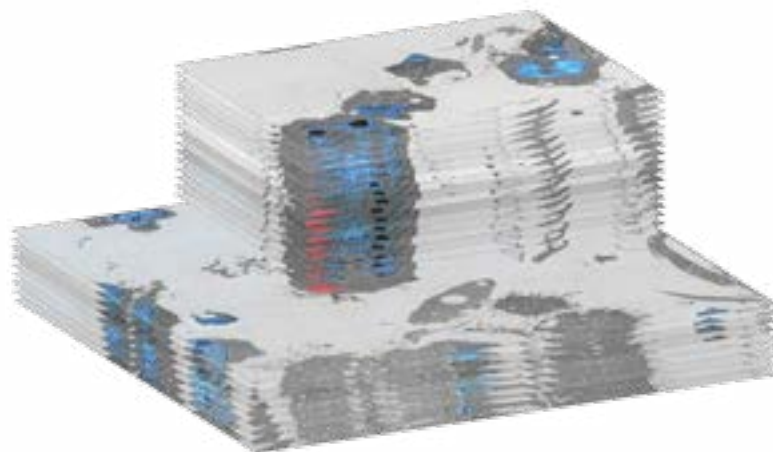






# Correlative Array Tomography for ZEISS ZEN Imaging Software

## 3D Correlative Light and Electron Microscopy for Serial Sections



*Correlative 3D data set by combining the serial LM and SEM images resulting from a ZEN Correlative Array Tomography experiment.*

### Highlights

With Array Tomography you use serial sections to reconstruct your sample volume. You cut your resin embedded tissue samples with an ultramicrotome into consecutive sections and image them. Precise automatic alignment of the section images allows 3D reconstruction of your sample. The section thickness determines your z-resolution. With the unique software module ZEN Correlative Array Tomography you connect your light and electron microscope: after automated image acquisition in the light microscope (LM), you transfer the sample to your electron microscope (EM) where you find the same software tools. You automatically image hundreds of sections across length scales and combine them into one single correlative volume data set.

- **Large scale 3D correlative microscopy**  
Simply outline one of the sections in your ribbon, then the software detects and marks all other sections automatically for imaging
- **Wizard-guided workflows**  
Enjoy step-by-step guided workflow solutions through wizard based approach
- **Reconstruction of 3D Data Set**  
Stitch, align and reconstruct images from your light and electron microscope into 3D stacks and investigate the finest details in your data from LM and EM

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Correlative Array Tomography for ZEISS ZEN Imaging Software and benefit from 3D correlative light- and electron microscopy for serial sections.

As technical requirements may apply on some systems, please contact us to learn more about the Correlative Array Tomography upgrade and how your imaging will benefit from an upgrade:

**[microscopy@zeiss.com](mailto:microscopy@zeiss.com)**



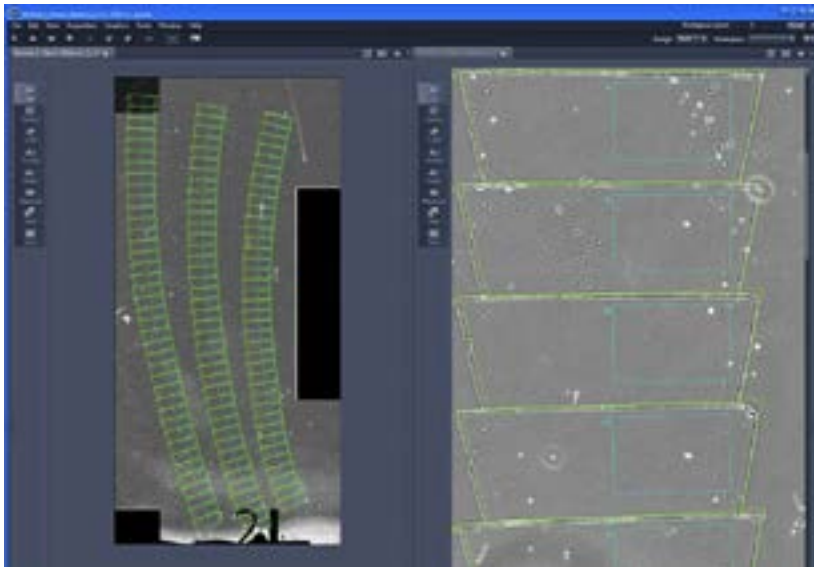


# Correlative Array Tomography for ZEISS ZEN Imaging Software

## 3D Correlative Light and Electron Microscopy for Serial Sections



The Correlative Array Tomography module in ZEN uses a series of wizards that guide you through calibration, automatic section detection and image acquisition of the selected regions in the LM and SEM.



The user interface shows the detected serial sections (green frame) after the automatic section detection process including the defined regions of interest (blue frame).

### Availability

The Correlative Array Tomography upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>



Included in ZEN



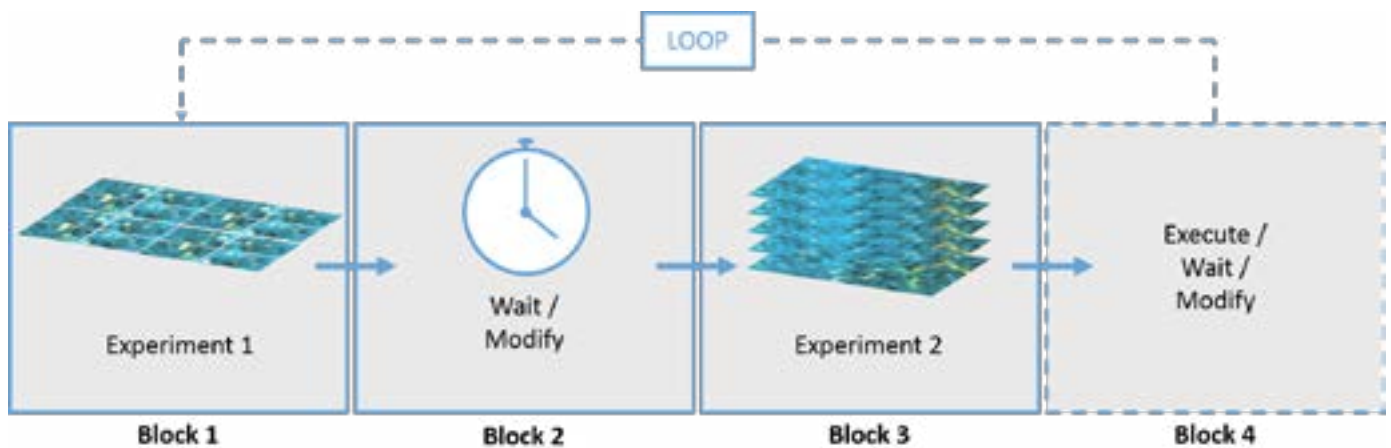
Optional in ZEN





# Experiment Designer for ZEISS ZEN Imaging Software

## Easily Plan, Combine and Repeat Complex Experiments



*Easily create complex experiments and benefit of highest flexibility.*

Would you like to plan complex experiments in advance but retain complete control at all times?

Using the Experiment Designer module provides the ability to create images in combined image dimensions within just a few mouse clicks.

Learn how combinations or repeats of image acquisition tasks such as time series, Z stacks, tile/multiposition images and channels, in a clearly visualizable form using experiment blocks benefit your results.

Repeat steps easily using loops.

Pauses or interactions can be defined if your experiment extends over a long period and requires interactive intervention.

The Experiment Designer upgrade supports an almost unlimited number of blocks in your experiments, which can naturally be saved and reloaded at any time.

### Highlights

- **Flexible workflow**  
Combine fully flexible different experiments at various areas of interest
- **Dedicated IP functions**  
Stitch and concatenate single .CZI files from a heterogeneous acquisition loop (Time-Stitching)
- **Ease of use**  
Easily adjust your hardware in-between such experiment blocks
- **Multi- & Single-Block data files**  
Conveniently view Multi-Block image data files while keeping the benefits of having single .CZI files

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Experiment Designer for ZEISS ZEN Imaging Software and benefit from easy experiment planning and repetition.

As technical requirements may apply on some systems, please contact us to learn more about the Experiment Designer upgrade and how your imaging will benefit from an upgrade:

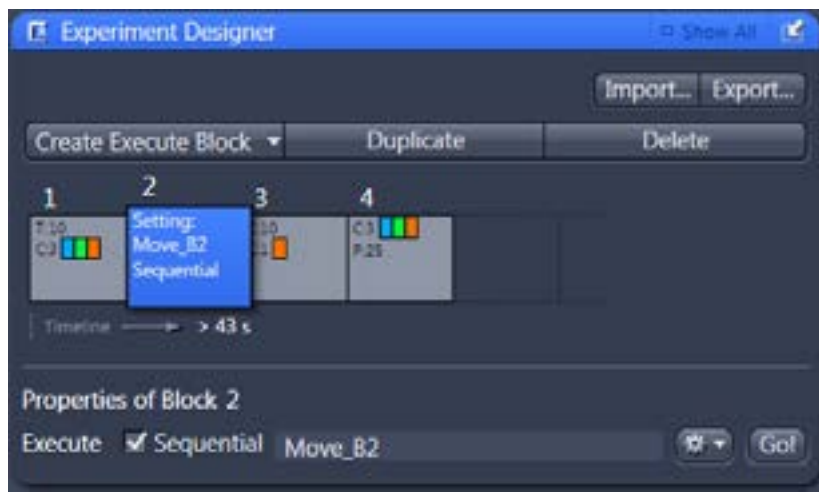
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# Experiment Designer for ZEISS ZEN Imaging Software

## Easily Plan, Combine and Repeat Complex Experiments



Graphically combine experiments and waiting blocks, execute settings and create loops over a defined subset of blocks.

### Availability

The Experiment Designer upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input type="radio"/>
ZEN desk (black edition)	<input checked="" type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN

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## Extended Focus ed Focus for ZEISS ZEN Imaging Software Easily Create Images With Extended Depth of Field



Single images from different focus planes of a sea urchin larva (pluteus stage, autofluorescence, FITC filter set, Plan-NEOFLUAR 10x objective, AxioCam MRm). With Extended Focus, users can achieve an image that is sharp over the whole thickness of the sample. (Left: 0 µm; Middle: 5 µm; Right: 10 µm)

With the Extended Focus module you generate images with extended depth of field from previously acquired Z stacks. The ZEN module extracts sharply imaged details from existing images at different focus positions and combines them to create a new image.

The advantage: you always have maximum depth of field in all regions of your images in transmitted light, reflected light and fluorescence contrast.

Upgrade your software additionally with Manual Extended Focus and receive the advantages of Extended Focus by focusing with the manual focus movement through the sample while an image is taken at individual positions, either every user defined interval seconds or manually.

### Highlights

- **Maximum depth of field imaging**  
Generate an image with maximum depth of field across all image regions by extracting focused details from existing Z stack images at different focus positions
- **One click to correct increment**  
Easily set the correct increment with the "Optimal" button to satisfy the Nyquist criterion
- **Almost no limits**  
Combine axial image stack acquisition seamlessly with other dimensions e.g. Multi Channel, Time Lapse etc.

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with (Manual) Extended Focus for ZEISS ZEN Imaging Software and benefit from images with extended depth of field.

As technical requirements may apply on some systems, please contact us to learn more about the Extended Focus upgrade and how your imaging will benefit from an upgrade:

[microscopy@zeiss.com](mailto:microscopy@zeiss.com)

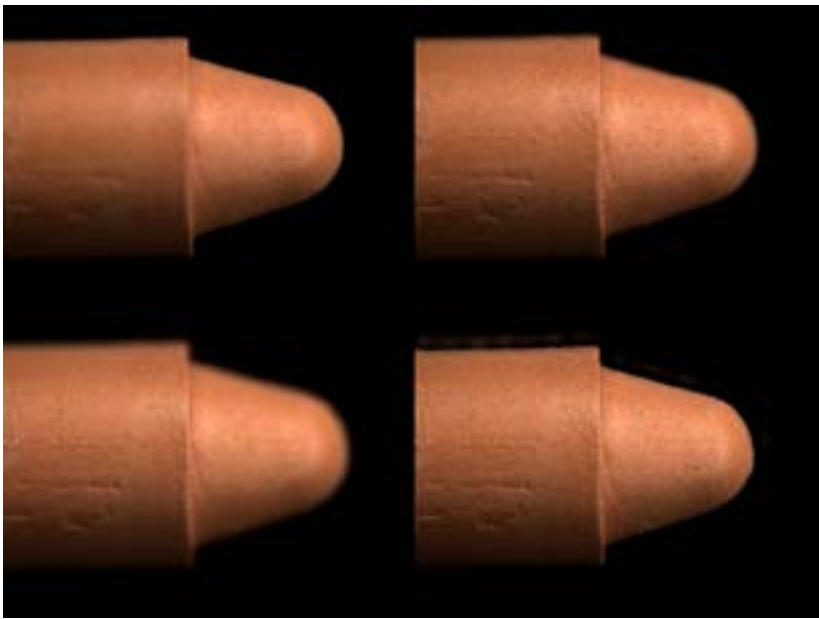




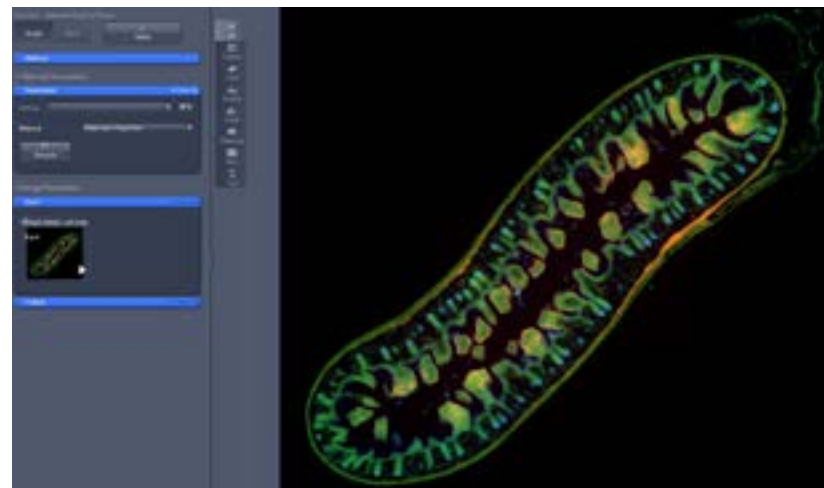


# (Manual) Extended Focus for ZEISS ZEN Imaging Software

## Easily Create Images With Extended Depth of Field



Sample shows part of a microswitch imaged with a SteREO Discovery operating ZEN 2 core at 20V. Dimensions: top row left 0.97mm; top row right 1.64mm; bottom row left 2.31mm; bottom row right using the entire Z-Stacks (75 single images).



Whole section mouse intestine images using Tiles and Z-stack and processed using the extended depth of focus module.

### Availability

The Extended Focus (1) and Manual Extended Focus (2) upgrade is available for the following software:\*

ZEN pro (blue edition)	<input checked="" type="radio"/>	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input checked="" type="radio"/>	<input type="radio"/>
ZEN desk (black edition)	<input type="radio"/>	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>	<input checked="" type="radio"/>
ZEN system (black edition)	<input type="radio"/>	<input type="radio"/>
ZEN lite	<input type="radio"/>	<input checked="" type="radio"/>
ZEN 2 core	<input checked="" type="radio"/>	<input checked="" type="radio"/>
ZEN 2 starter	<input type="radio"/>	<input checked="" type="radio"/>

Included in ZEN     Optional in ZEN

\*When working with ZEN (blue edition or ZEN 2 core) the image generation using this module works as a processing step for acquired Z stacks. The ZEN module Z Stack and a motorized Z drive are additionally required.

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microscopy@zeiss.com  
www.zeiss.com/microscopy

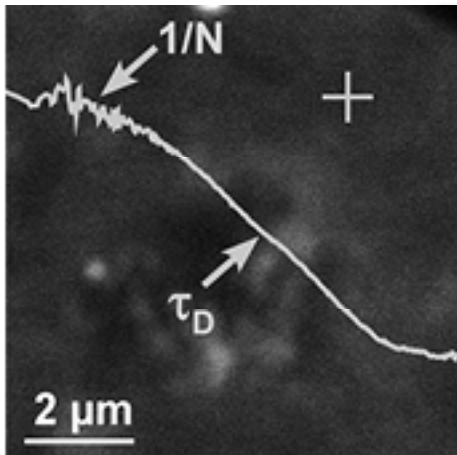






## FCS for ZEISS ZEN Imaging Software

### Improved & Easy Display of Relevant Parameters



With the highly sensitive and stable GaAsP detectors of LSM 880 you easily perform Fluorescence Correlation Spectroscopy (FCS). You get information about the kinetics of single molecules.

#### Highlights

Fluorescence Correlation Spectroscopy (FCS) for ZEISS ZEN Imaging Software is a tool that provides quantitative localized measurements of important physical parameters including mechanisms of transport, molecular mobilities, and densities of fluorescently labeled species. In the most basic configuration, FCS examines the inherent correlations exhibited by the fluctuating fluorescent signal from labeled molecules as they transition into and out of a specified excitation volume or area.

- **High information rate**  
Display easily relevant parameters for adjustment of experimental conditions and perform FCS functions online
- **Direct read out**  
Get quickly access to diffusion times, diffusion coefficients, molecule numbers and concentration without the need of calibration
- **Diffusion model fitting function**  
Fit free diffusion models with up to three components

#### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with FCS for ZEISS ZEN Imaging Software and benefit from localized measurements and a high information rate.

As technical requirements may apply on some systems, please contact us to learn more about the FCS upgrade and how your imaging will benefit from an upgrade:

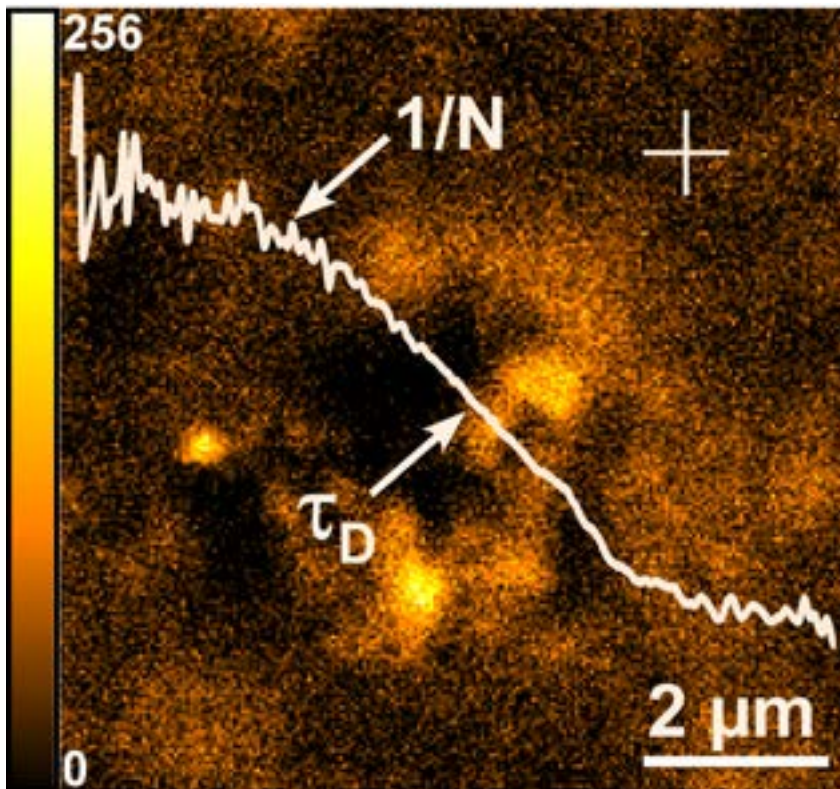
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# FCS for ZEISS ZEN Imaging Software

## Improved & Easy Display of Relevant Parameters



HP 1a-GFP fusion protein expressed in human M26 cells. Shown are hetero- (dense) and euchromatin regions of the cell nucleus (intensity color coded between 0 and 256 grey values of a glow look up table) FCS measurement was taken at the indicated position (cross) in the euchromatin region. The FCS curve displays the average of  $10 \times 10$  s measurements, from which the diffusion time ( $t_D$ ) and the number of molecules ( $N$ ) can be retrieved.

### Availability

The FCS upgrade is available for the following software:

ZEN pro (blue edition)	<input type="checkbox"/>
ZEN desk (blue edition)	<input type="checkbox"/>
ZEN desk (black edition)	<input checked="" type="checkbox"/>
ZEN system (blue edition)	<input type="checkbox"/>
ZEN system (black edition)	<input checked="" type="checkbox"/>
ZEN lite	<input type="checkbox"/>
ZEN 2 core	<input type="checkbox"/>
ZEN 2 starter	<input type="checkbox"/>

Included in ZEN     Optional in ZEN

Not for therapeutic, treatment or medical diagnostic evidence. Not all products are available in every country. Contact your local ZEISS representative for more information. EN\_43\_012\_148 | CZ-10/2018 | Design, scope of delivery and technical progress subject to change without notice. | © Carl Zeiss Microscopy GmbH



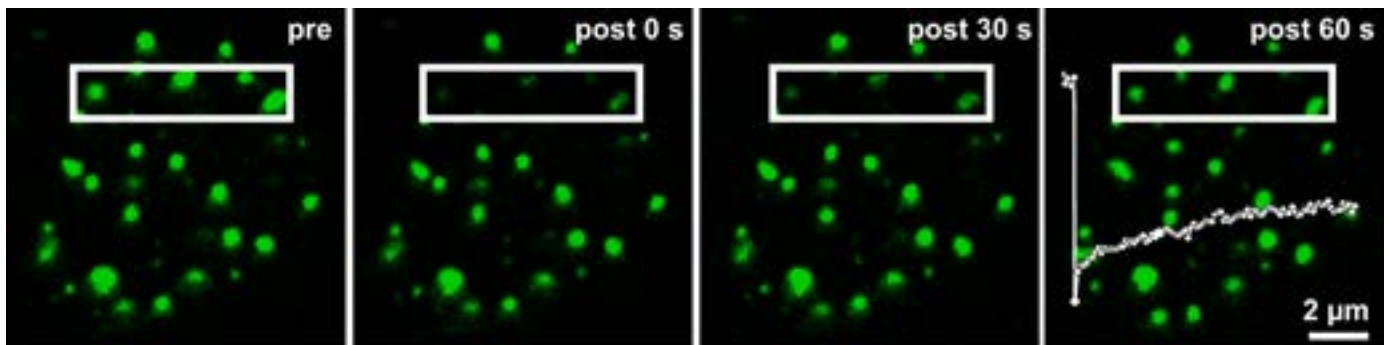
microscopy@zeiss.com  
www.zeiss.com/microscopy





## FRAP for ZEISS ZEN Imaging Software

### Impressive Pixel-Precise Bleaching



Use FRAP to study dynamics of proteins. The example shows EGFP-CENPI in HepG2 cells before bleach ("pre"), and at the indicated time points after the bleach ("post"). The recovery curve (superimposed in the last image and showing the recovery from bleach at 0 s to 60 s, intensities in AU) can be used to calculate the diffusion coefficient of the molecule.

Fluorescence Recovery After Photobleaching (FRAP) is designed to study molecule interaction and motion. With the FRAP for ZEISS ZEN Imaging Software, your regions of interest (RIOs) can be bleached with pixel precise while the advanced software module enables an individual setting option. Laser line, laser power and bleach protocol can now be individually adjusted to your needs and requirements. Manage online experiment feedback and recording tools to display the fluorescence recovering phase. Furthermore, FRAP is in possession of an exponential fit function for one or two components.

#### Highlights

- **Pixel-precise bleaching**  
Define your regions of interest with pixel precise through an easy setup of FRAP experiment
- **Enhanced estimation tool**  
Estimate global diffusion constant to molecules by basic fit functions
- **Improved calculation tool**  
Calculate the immobile and mobile fraction of a molecule, the recovery half-time and diffusion coefficient
- **Individual settings**  
Adjust laser line, laser power and bleach protocol to your individual working requirements

#### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with the FRAP option and benefit from pixel precise bleaching and a great range of molecule investigation-tools.

As technical requirements may apply on some systems, please contact us to learn more about the FRAP upgrade and how your imaging will benefit from an upgrade:

[microscopy@zeiss.com](mailto:microscopy@zeiss.com)

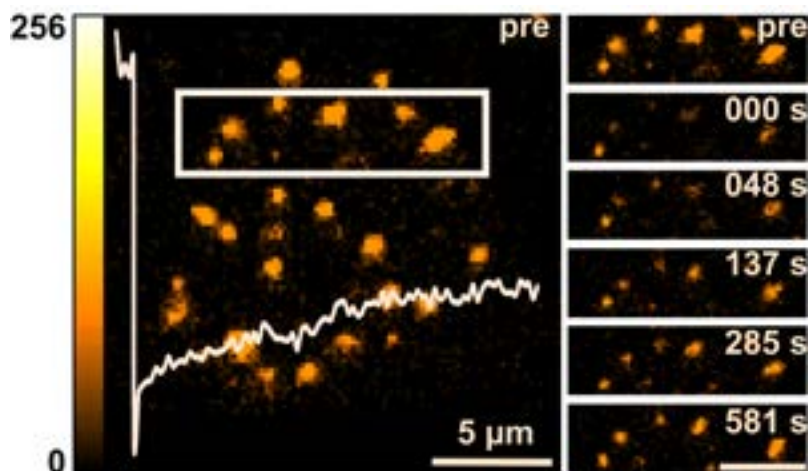






# FRAP for ZEISS ZEN Imaging Software

## Impressive Pixel Precise Bleaching



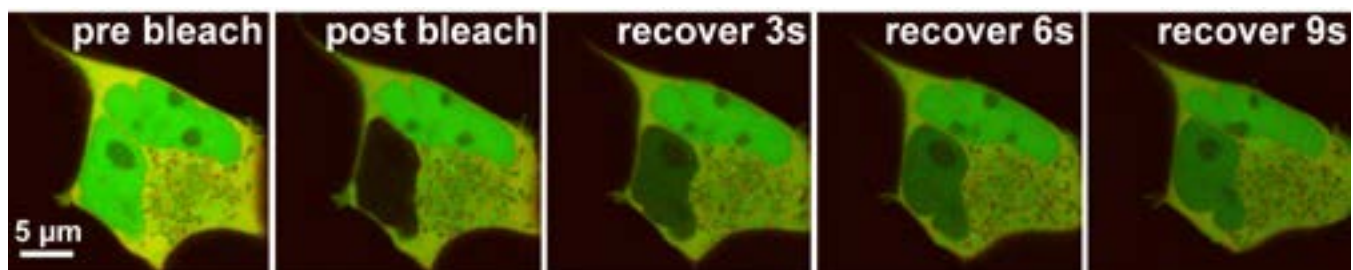
EGFP-CENPI expressed in HepG2 cells before *bleach* (*pre*, left panel), and at different time points after the *bleach* (0, 48, 137, 285 und 581 s, right panels). Intensity color coded between 0 and 256 grey values of a glow look up table. Bars indicate 5 µm. The redistribution curve (left panel) determines the mobile fraction and the diffusion coefficient.

### Availability

The FRAP upgrade is available for the following software:

ZEN pro (blue edition)	
ZEN desk (blue edition)	
ZEN desk (black edition)	<input checked="" type="radio"/>
ZEN system (blue edition)	
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	
ZEN 2 core	
ZEN 2 starter	

Included in ZEN     Optional in ZEN



GFP expressed in HepG2 cells before *bleach* (*pre bleach*), after the *bleach* (*post bleach*) and at different time points after the *bleach* (*recover 3s*, *6s* and *9s*). Bar indicates 5 µm. The speed in redistribution into the bleached area reveals the diffusion coefficient of the molecules.

Not for therapeutic, treatment or medical diagnostic evidence. Not all products are available in every country. Contact your local ZEISS representative for more information. EN\_43\_012\_145 | CZ-10/2018 | Design, scope of delivery and technical progress subject to change without notice. | © Carl Zeiss Microscopy GmbH



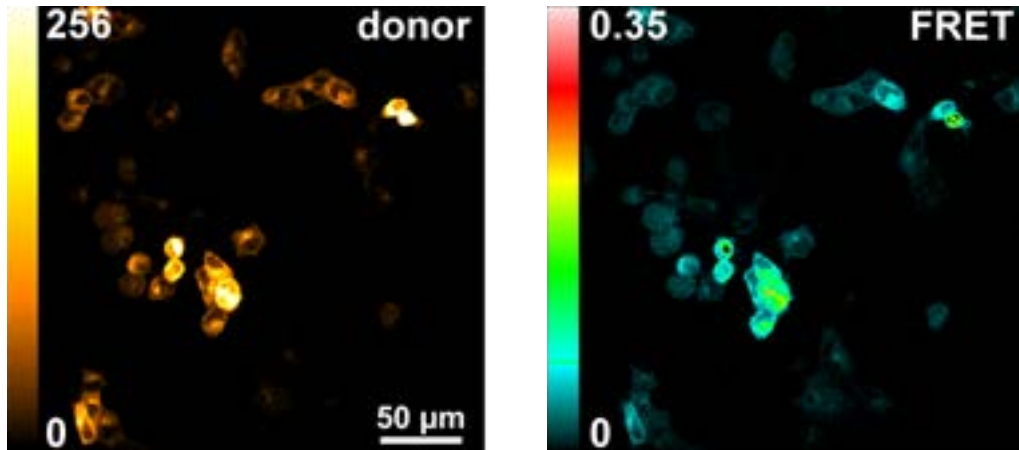
microscopy@zeiss.com  
www.zeiss.com/microscopy





# FRET for ZEISS ZEN Imaging Software

## Study True Protein-Protein Interactions



Hep G2 cells, LSM 800 application image for FRET, two interacting proteins (donor false colored in green, acceptor false colored in red) in HepG2 cells ("before bleach"). By acceptor-photobleaching (within the indicated white circle) acceptor intensity will decrease while donor intensity will increase ("after bleach") as indicated by the green (donor) and red (acceptor) bars. The increase in donor intensity can be used to calculate FRET efficiencies.

### Highlights

Förster Resonance Energy Transfer (FRET) for ZEISS ZEN Imaging Software is an improved module to observe interactions of molecules. With FRET two differently strained molecules will transfer energy at a distance of less than 10nm, such as that the second fluorophore, which is not excited with light, will start emitting light. Through heat maps based on the most commonly used models: Gordon, Youvan and Xia, FRET enables to demonstrate its efficiencies at structural changes of molecules (protein folding). Experience pixel precise bleaching receive great imaging results.

- **Pixel precise bleaching**  
Define your regions of interest with pixel precise for Acceptor Photo-bleaching (AP)
- **Two steady state techniques**  
Benefit from two steady state techniques at disposal: Acceptor Photo-bleaching (AP) and Sensitized Emission (SE)
- **Heat maps**  
Display your FRET efficiencies by heat maps based on the three most commonly used models

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with FRET for ZEISS ZEN Imaging Software and benefit from pixel precise bleaching and impressive heat maps.

As technical requirements may apply on some systems, please contact us to learn more about the FRET upgrade and how your process will benefit from an upgrade:

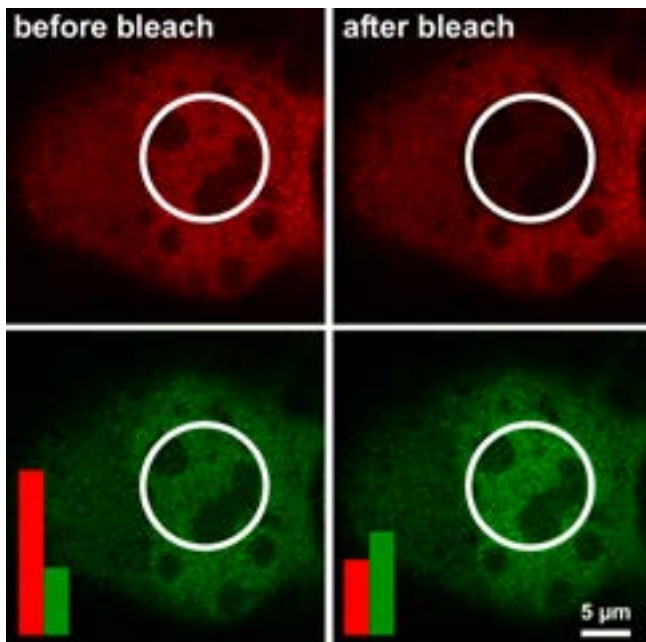
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# FRET for ZEISS ZEN Imaging Software

## Study True Protein-Protein Interactions



Two interacting proteins tagged with CFP (donor) and YFP (acceptor) in HepG2 cells. Left panel shows the donor (intensity color coded between 0 and 256 grey values of a glow look up table; scale bar indicates 50 µm). Right panel indicates the FRET channel obtained by sensitized emission from which the FRET efficiencies calculated according to Youvan are displayed as fraction (color coded as indicated by the left bar). They can be used to compute the distance between the donor and acceptor molecules.

### Availability

The FRET upgrade is available for the following software:

ZEN pro (blue edition)	
ZEN desk (blue edition)	
ZEN desk (black edition)	●
ZEN system (blue edition)	
ZEN system (black edition)	●
ZEN lite	
ZEN 2 core	
ZEN 2 starter	

● Included in ZEN    ● Optional in ZEN

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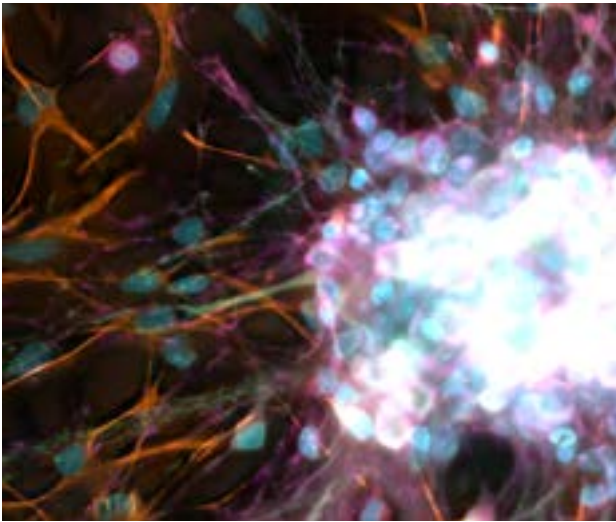




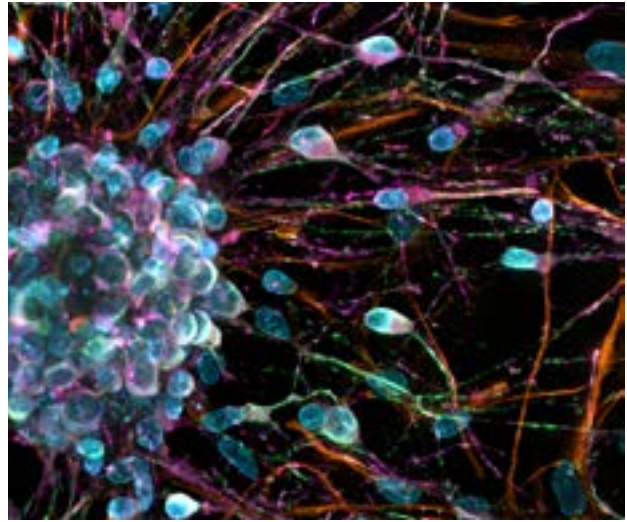


## GPU Deconvolution for ZEISS ZEN Imaging Software

### Discover More Details Through Improved Contrast and Resolution



*Rat cortical primary culture using conventional Widefield.  
Sample courtesy of H. Braun, LSM Bioanalytik GmbH, Magdeburg,  
Germany.*



*Same image processed with GPU-based deconvolution.*

When imaging three-dimensional samples, out-of-focus light sometimes blurs your structure of interest. For these images, you need deconvolution – a mathematical method – to increase contrast and improve the signal-to-noise ratio and resolution.

The new GPU-accelerated, CUDA® available in ZEN is now up to 30 times faster than the traditional technology, making deconvolution now practical to apply even for large data sets. ZEISS Deconvolution upgrade offers advanced correction methods for bleaching, bad pixels, background and lamp flicker to ensure highly detailed image resolution of your area of interest.

#### Highlights

- **Improved image resolution**  
Remove the out-of-focus blur and get better contrast and signal-to-noise
- **Increased productivity**  
Enhance your productivity thanks to the up to 30 times faster GPU-based deconvolution
- **Large data sets acquisition**  
Ideal for large datasets acquired in demanding long-term, time-lapse or multiwell screening applications
- **Ease of use**  
Receive quick results thanks to a simple one-button-solution

#### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with the GPU Deconvolution option and benefit from enhanced contrast and improved processing speeds.

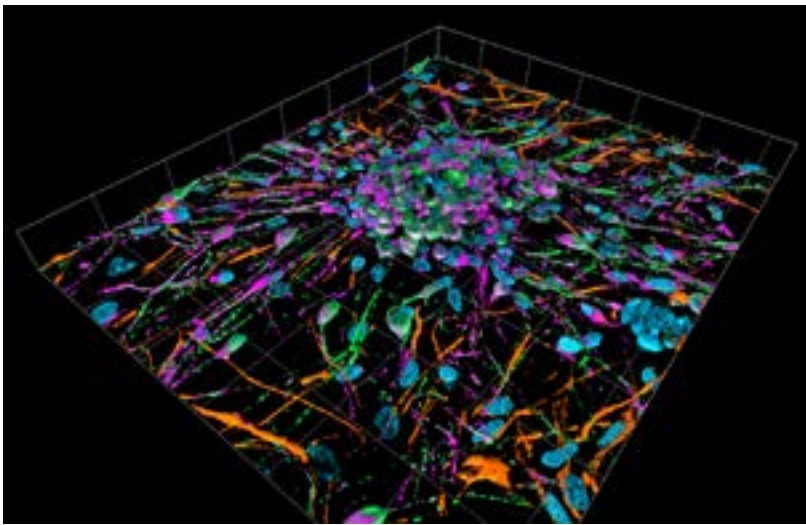
As technical requirements may apply on some systems, please contact us to learn more about the GPU Deconvolution upgrade and how your imaging will benefit from an upgrade:  
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# GPU Deconvolution for ZEISS ZEN Imaging Software

## Discover More Details Through Improved Contrast and Resolution



Rat cortical primary culture. Antibody staining of bIII-tu-bulin (Cy2, green), Nestin (Cy3, red) and DCX (Cy5, purple), nuclei stained with DAPI (blue). 3D reconstruction of the deconvolved Z-Stack (shadow projection).  
Sample courtesy of H. Braun, LSM Nioanalytik GmbH, Magdeburg, Germany.

### The Technology Behind It

CUDA® is a parallel computing platform and programming model invented by NVIDIA®.

You benefit from greatly increased computing performance by harnessing the power of the graphics processing unit (GPU).

Using this powerful hardware, the complex and demanding calculations for the deconvolution of images can now be completed in a fraction of the time it took before.

GPU Deconvolution requires a CUDA® capable NVIDIA® graphics card (sold separately).

### Availability

The GPU upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input checked="" type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>



Included in ZEN



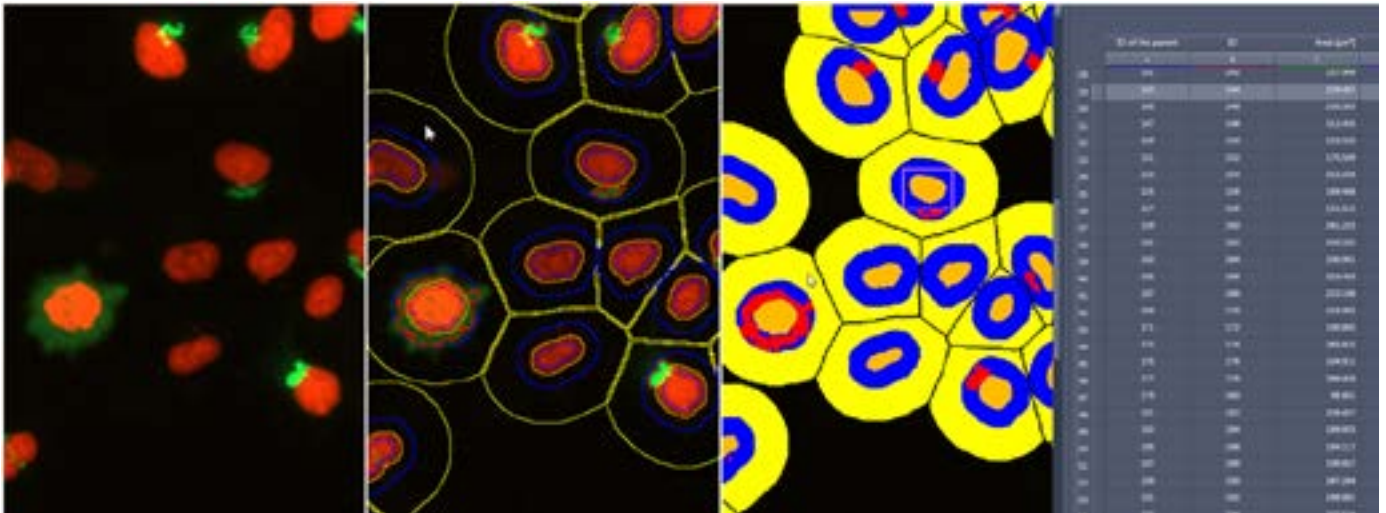
Optional in ZEN





# Image Analysis for ZEISS ZEN Imaging Software

## Analyze Your Images Automatically without Expert Knowledge



Automatic image analysis made easy - detect the object in your sample and get the results you need.

Image Analysis allows you to generate automatic measurement programs in a fast and simple way, even without programming knowledge. With the measurement program wizard you tackle complex measurement tasks in just a few minutes. Once created, the programs are always available and you can use them to analyze an unlimited number of images. Retain full control over the measurement process at all times and adjust the settings to your needs. If necessary each step can be changed interactively before being executed. Finally you can export all your measurement data in the Excel-compatible .CSV table format further processing.

### Highlights

- **Full flexibility**  
Choose between interactive-run and fully automatic image analysis
- **Ease of use**  
Experience user-friendly, wizard-assisted set up of automatic measurement programs
- **Seamless processing**  
Export measurement data in Excel-compatible .CSV table format for data display and further processing
- **Automatic image quantification**  
Analyze a large number of images automatically and get statistically significant data

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Image Analysis for ZEISS ZEN Imaging Software and automatically analyze large numbers of images in a flash, create repeatable image analysis results and get the statistics you need.

As technical requirements may apply on some systems, please contact us to learn more about the Image Analysis upgrade and how your imaging will benefit from an upgrade:

[microscopy@zeiss.com](mailto:microscopy@zeiss.com)

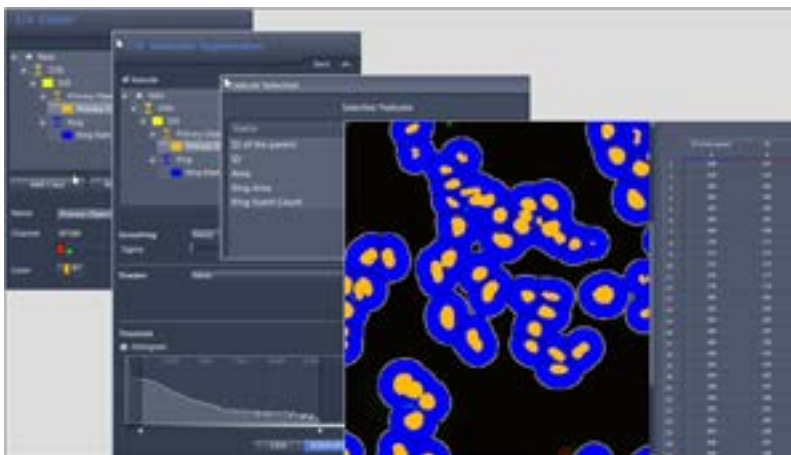






# Image Analysis for ZEISS ZEN Imaging Software

## Analyze Your Images Automatically without Expert Knowledge



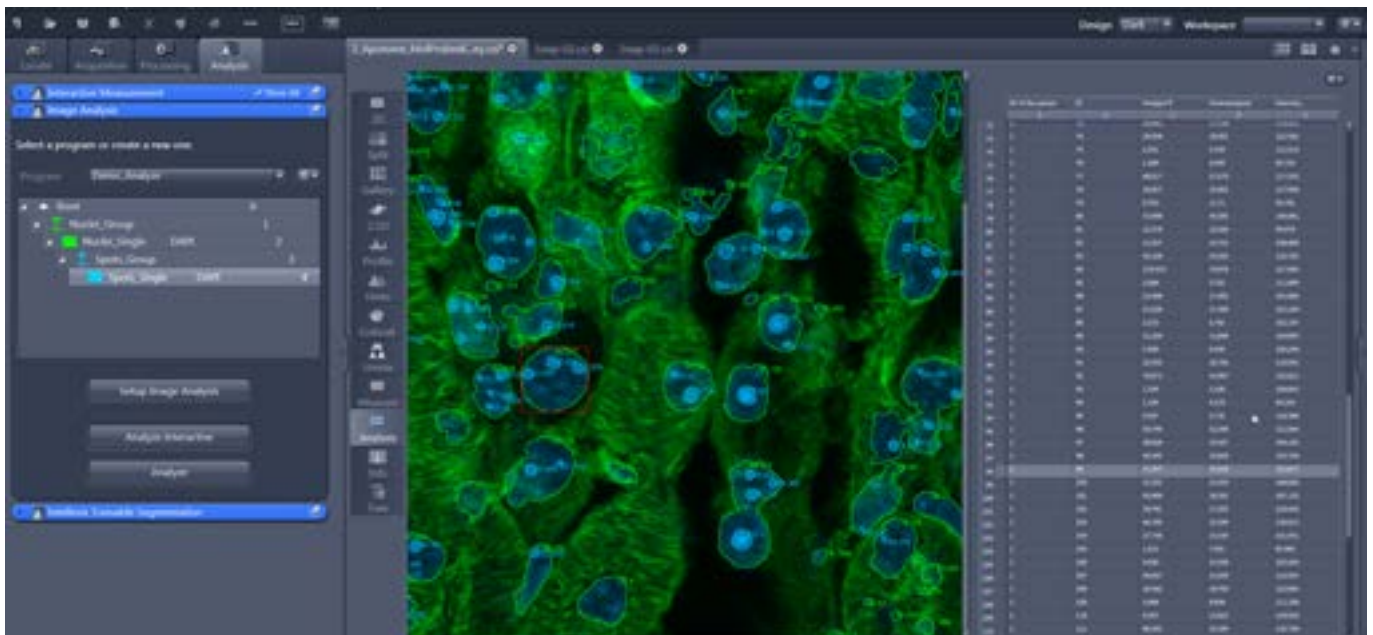
The image analysis wizard guides you through all the steps necessary to set up an automated image analysis.

### Availability

The Image Analysis upgrade is available for the following software:

ZEN pro (blue edition)	<input type="radio"/>
ZEN desk (blue edition)	<input type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input type="radio"/>
ZEN system (black edition)	<input type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN



Run your analysis in interactive mode or completely automatically and get a list with results for the objects detected.

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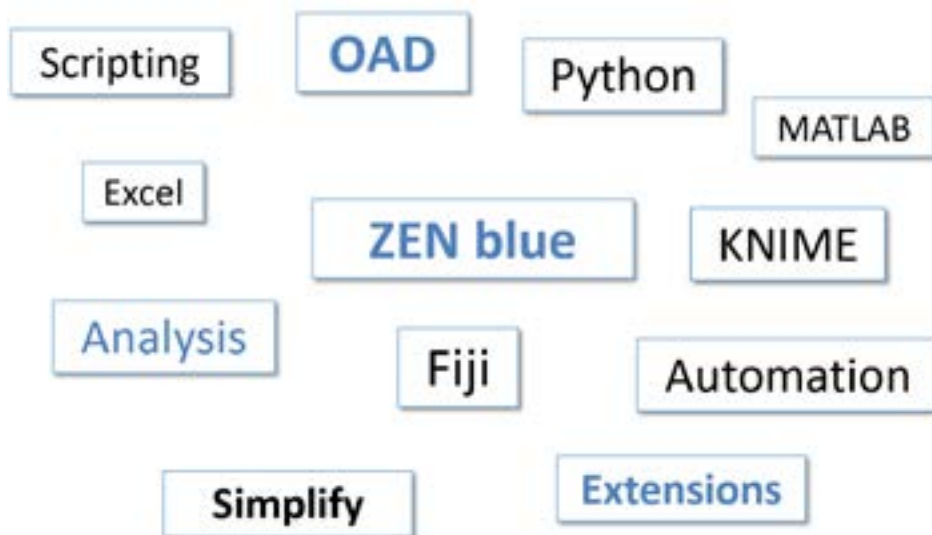
microscopy@zeiss.com  
www.zeiss.com/microscopy





# Macro Environment for ZEISS ZEN Imaging Software

## Customize and Automate ZEN for Your Superior Requirements



*When microscopy is more than acquiring images: Automate workflows (Acquisition, processing, analysis) and utilize external programs.*

The Macro Environment module provides an Integrated Development Environment (IDE) based on Python with macro editor, debugger and recorder. Customize and automate ZEN for your individual superior needs with a selected set of commands. Record and analyze image data and control hardware with self-created and automated workflows. Extend functionality by including additional libraries like the .Net Framework to significantly enlarge the field of application of ZEN. Exchange data with external applications and if required draw on the built-in help file and object model documentation.

On-demand custom solutions are available upon request.

### Highlights

- **Efficient workflows**  
Automate and streamline workflows (acquisition, image processing, image analysis) and create intelligible GUIs
- **Seamless processing**  
Smoothly integrate ZEN into complex workflows with external programs
- **Minimized user interaction**  
Set-up custom workflows and minimize user interaction
- **External applications**  
Start external programs from ZEN, e.g. integrate external data display

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Macro Environment for ZEISS ZEN Imaging Software and benefit from customized and automated ZEN Imaging Software for your superior requirements.

As technical requirements may apply on some systems, please contact us to learn more about the Macro Environment upgrade and how your imaging will benefit from an upgrade:  
**microscopy@zeiss.com**

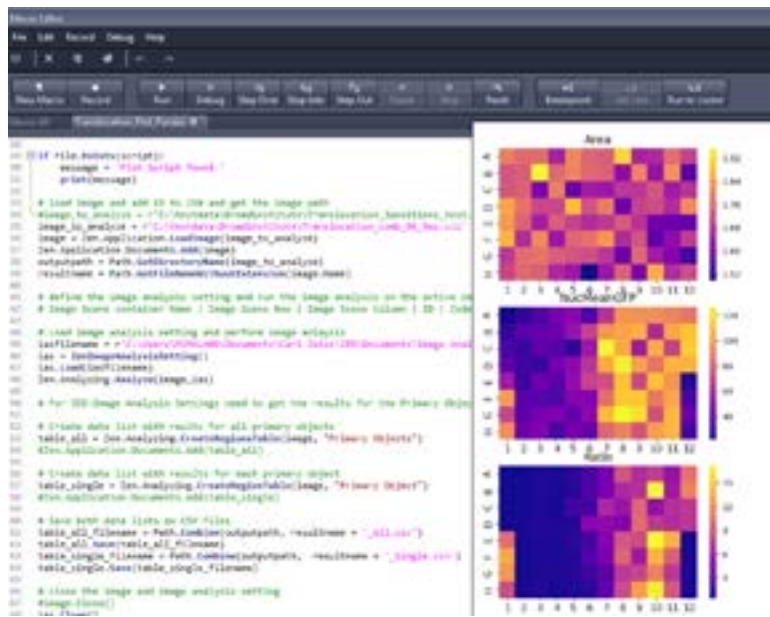






# Macro Environment for ZEISS ZEN Imaging Software

## Customize and Automate ZEN for Your Superior Requirements



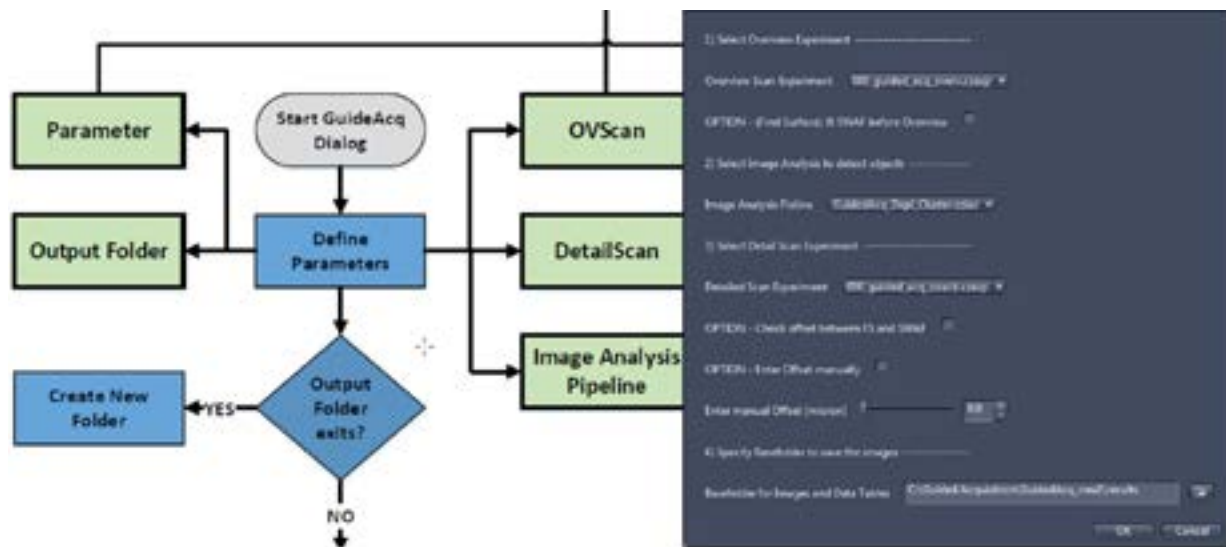
Record and modify macros and start external applications for data analysis and display.

### Availability

The Macro Environment upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input checked="" type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input checked="" type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN



Automate complex workflows and create customized dialogs.



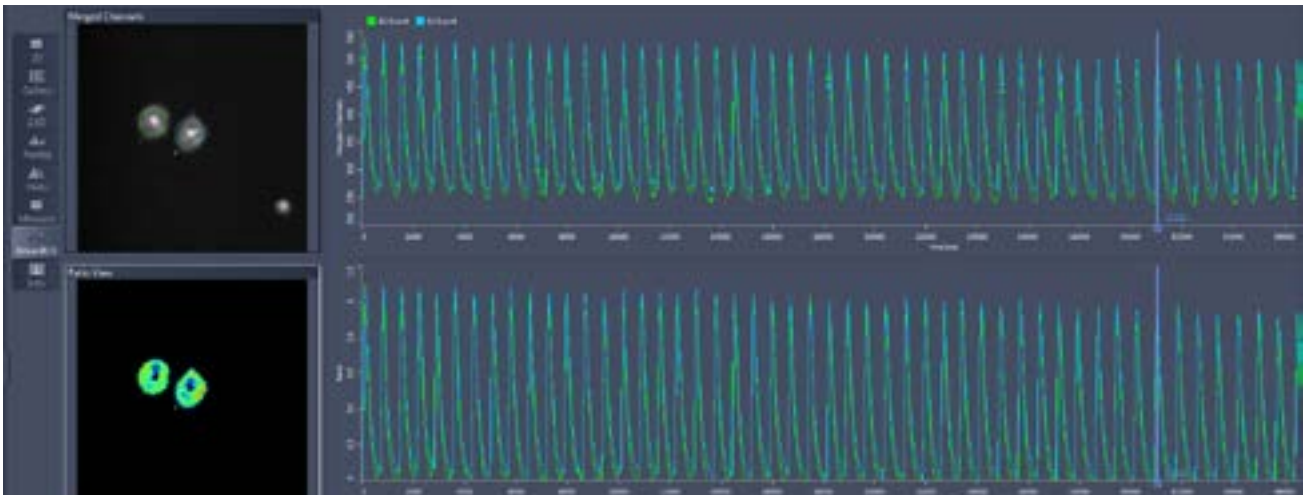
microscopy@zeiss.com  
www.zeiss.com/microscopy





## Physiology for ZEISS ZEN Imaging Software

### Analyze Physiological Time Series Data from Ion Imaging



*Flu-4 labelled cells are stimulated resulting in fast fluctuations in intensity that correspond to rising and falling calcium levels. The averaged basal intensity can be used to calculate the ratio to the intensity at any given time point.*

#### Highlights

With the Physiology module you are able to analyze physiological time series data, especially to measure fast ion fluctuations e.g. intracellular calcium in living cells and tissues. This happens in a fully interactive and flexible manner with advanced charting and analysis functions. Using the Physiology function you specify user-defined measurement regions (ROIs) before the acquisition of your time lapse experiment and analyze their time-dependent changes in intensity online during acquisition. Ratios can also be calculated and displayed online. Furthermore you can change acquisition speed and execute predefined hardware settings as appropriate online. A precondition for a physiology experiment is a Time Series experiment which is set up in the Time Series tool.

- **Impressive insights**  
Observe fundamental and delicate parametric changes in ion imaging time lapse experiments within living cells and tissues
- **Operation feedback**  
Receive detailed feedback at every time point of the acquisition, allowing you to interact with the data as required
- **Flexible combination of dimensions**  
Combine the Physiology module seamlessly with other modalities e.g. triggered acquisition, dual camera, etc.
- **Full flexibility**  
Change your acquisition speed using definable switches and annotate experiment conditions

#### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Physiology for ZEISS ZEN Imaging Software and benefit from analyses of physiological time series data.

As technical requirements may apply on some systems, please contact us to learn more about the Physiology upgrade and how your imaging will benefit from an upgrade:

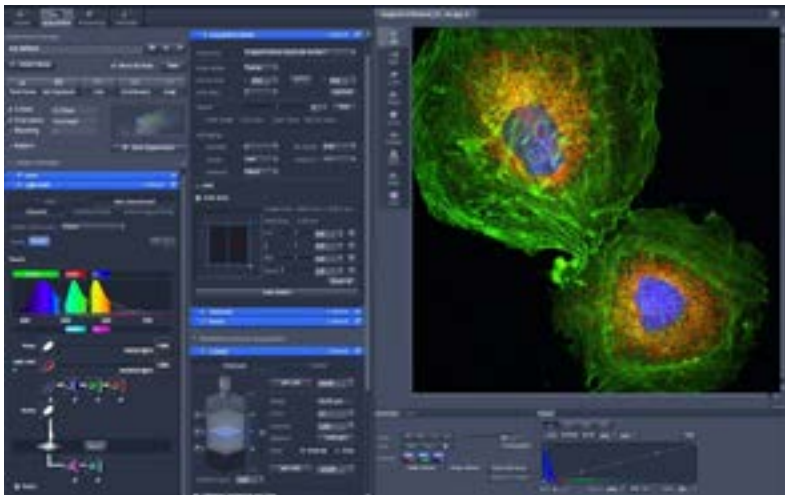
[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# Physiology for ZEISS ZEN Imaging Software

## Analyze Physiological Time Series Data from Ion Imaging



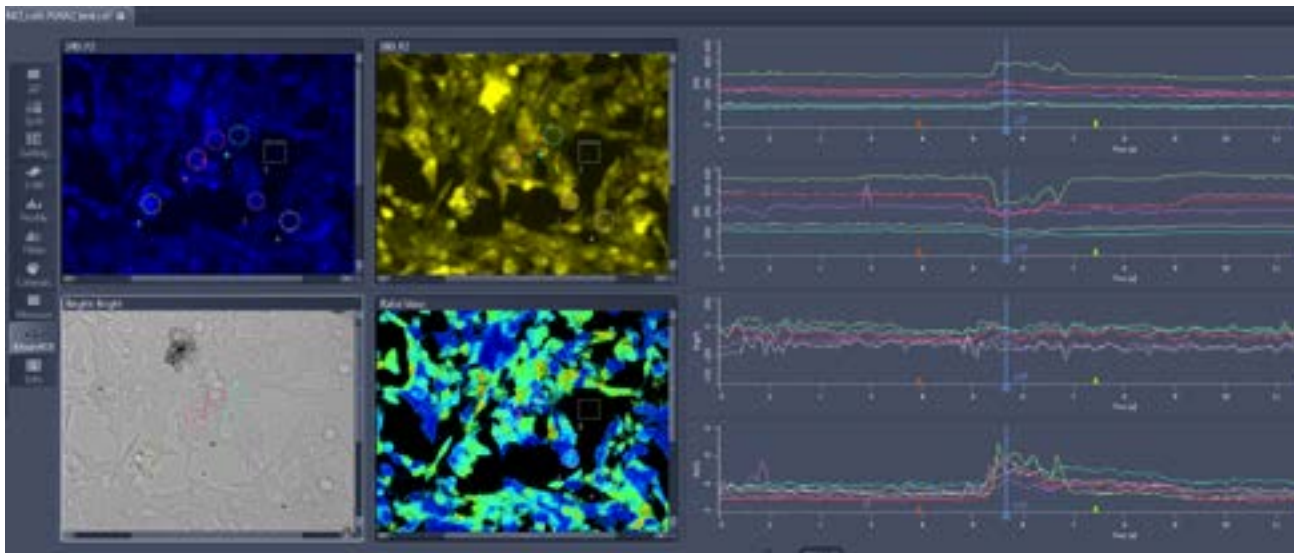
Physiology module for intensity analyses over time; 3D VisArt for 3D rendering of the image stacks.

### Availability

The Physiology upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input checked="" type="radio"/>
ZEN desk (black edition)	<input checked="" type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN



Cells are load with FURA-2 dye and are imaged sequentially are 340 nm and 380 nm over time. Additionally, the cells are monitored with a Bright field image. The Ratio of the 340 and 380 image pairs are calculated per time point. The measured intensity values and the ratio are plotted over time. Image courtesy of Prof. R. Warth, University of Regensburg.

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microscopy@zeiss.com  
www.zeiss.com/microscopy

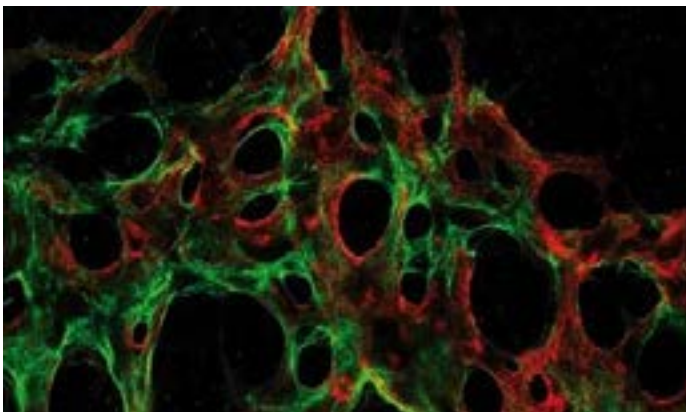




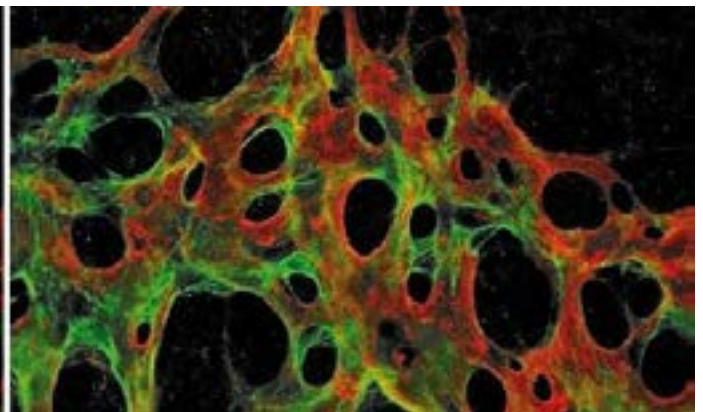


## ROI-HDR for ZEISS ZEN Imaging Software

Acquire and Display HDR Image Data with Extended Dynamic Range, incl. Illumination Blanking



Retinal Slice imaged without HDR.



Retinal Slice imaged with HDR.

### Highlights

The ROI-HDR (High Dynamic Range Imaging) function enables intelligent enhancement of the image dynamics. The bright and dark areas of the specimen are scanned with individual and adapted acquisition settings ensuring that optimal imaging fidelity is achieved for all parts of a specimen (e.g. nerve cells). Weak structures will no longer disappear, and bright structures will no longer saturate. You can choose between variation of detection gain or laser excitation and define the number of acquisition steps. Processing of the HDR series will happen automatically.

- **Reduced light exposure**  
Minimize sample damages by tightly controlled light exposure through starting at low power levels and adding laser exposure only where it is needed (ROI-HDR)
- **Multicolor spectral imaging**  
Ensure impressive image quality at multicolor spectral imaging or connectivity studies in neuroscience
- **Superb detail resolution**  
Receive great quality of image details even with critical strainings

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with ROI-HDR for ZEISS ZEN Imaging Software and benefit from insights in faint details and dynamic processes in your living specimens.

As technical requirements may apply on some systems, please contact us to learn more about ROI-HDR for ZEISS ZEN Imaging Software upgrade and how your imaging will benefit from an upgrade:

**[microscopy@zeiss.com](mailto:microscopy@zeiss.com)**

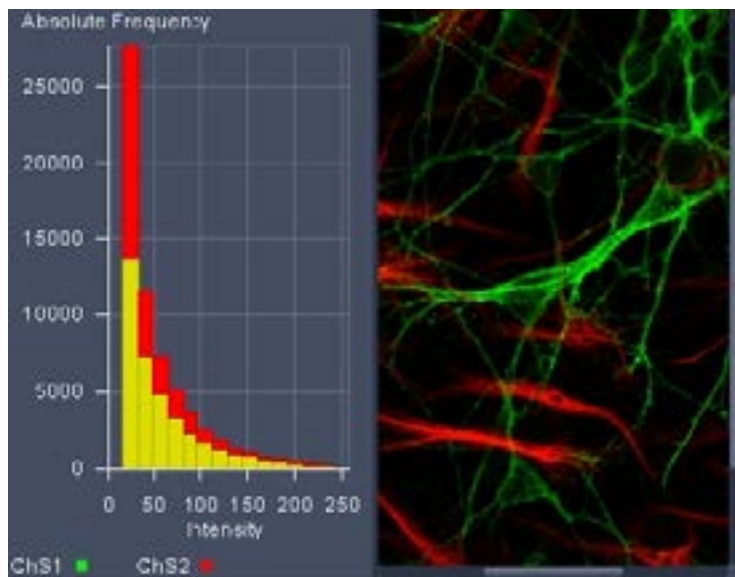




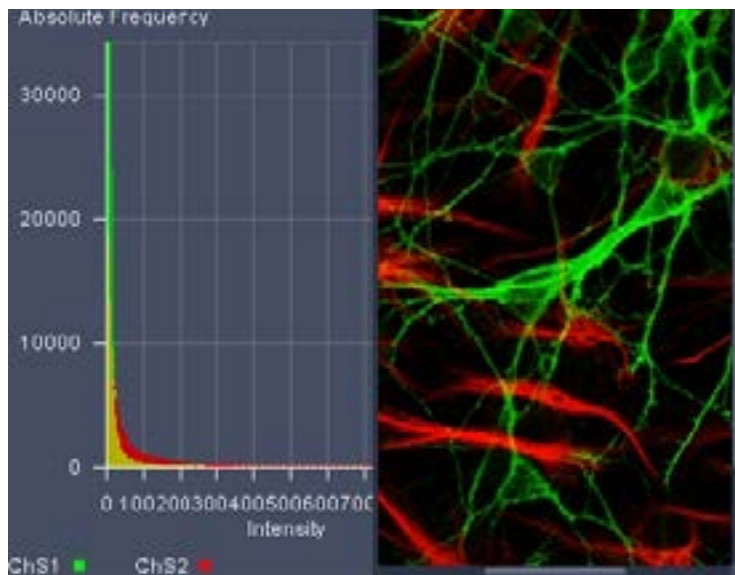


## ROI-HDR for ZEISS ZEN Imaging Software

Acquire and Display HDR Image Data with Extended Dynamic Range, incl. Illumination Blanking



ROI-HDR imaging increases the dynamic range in confocal microscopy, and reveals weak structures with correct grey value proportions. Conventional imaging of cytoskeleton with 8 bit dynamics and losses in faint labelled fibers.



HDR imaging with up to 32 bit dynamics and tone mapping, no losses in faint labelled fibers.

### Availability

The ROI-HDR upgrade is available for the following software:

ZEN pro (blue edition)	
ZEN desk (blue edition)	
ZEN desk (black edition)	<input checked="" type="radio"/>
ZEN system (blue edition)	
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	
ZEN 2 core	
ZEN 2 starter	

Included in ZEN     Optional in ZEN

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## Shuttle & Find for ZEISS ZEN Imaging Software

Bridge the Micro and Nano World



### Highlights

With Shuttle & Find, you connect your electron microscope and light microscope from ZEISS. The combined hardware and software solution enables you to transfer your specimen from one microscope system to another in just minutes. A process that has until now taken hours, or even days. Thanks to automatic relocation of regions of interest (ROI) in both systems you analyze your sample efficiently. A typical workflow: Use your stereo, light microscope, confocal and superresolution microscope to find the structures or cells you are interested in. Image the ROIs with their fluorescently labeled proteins then transfer the specimen to your scanning electron microscope (SEM). Shuttle & Find speeds up your acquisition workflow by keeping track of your ROIs. Benefit from shorter time to result, get more data in shorter time, correlate and now overlay images from your ZEISS light and electron microscope.

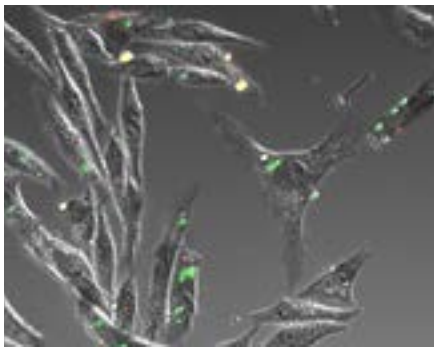
- **Receive more information**  
Combine optical contrasting techniques from your light microscope with the analytical methods of your electron microscope to discover more about the morphology and structure of your samples
- **Fast calibration**  
Speed up your workflow with a fast three-point calibration to easily relocate ROIs
- **Flexible choice of components**  
Use the modular concept to combine your ZEISS light and electron microscopes and build flexible systems tailored to your applications
- **Precise correlation**  
Generate correlative overlay images with the help of Shuttle & Find's built-in functions
- **Easy recovery**  
Out of the archive you can open the images from your light microscope, and directly access them on your electron microscope
- **Fully workflow integrated**  
Deploy this powerful software to add correlative benefits to your workflows and control all necessary functions easily



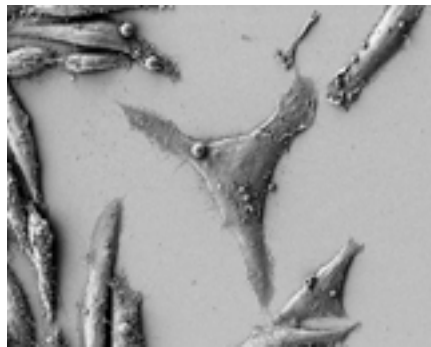


## Shuttle & Find for ZEISS ZEN Imaging Software

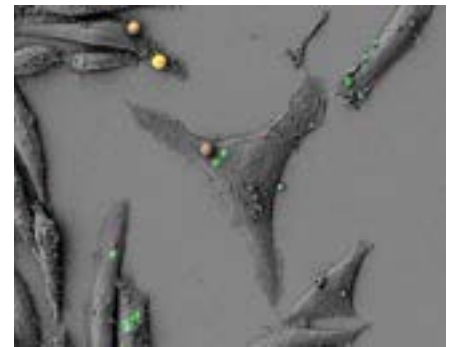
Bridge the Micro and Nano World



Light microscopy



Electron microscopy



Correlation of both light and electron microscopy

### Correlative Workflow

Mount your sample in a ZEISS correlative microscopy holder. After a semi-automatic 3-point calibration you can analyze your sample and capture images. Then transfer your sample along with the holder into the scanning electron microscope. Perform the same fast calibration. Out of the archive you can open the images from your light microscope and directly access them on your electron microscope. After you have acquired all of your images from the different microscopes you can now create correlative image overlays. The resulting images can be saved and used in your reports.

### The best of two worlds

Light and electron microscopy are two highly developed technologies that ideally complement each other. Now, they are being merged to provide new insights and enhanced productivity. Add digital microscopes as the world's only manufacturer of digital, light and electron microscopes in all performance classes, ZEISS is your one-stop shop and provides a bridge between both. Shuttle & Find provides easy sample transfer, fast coordinate recovery and powerful image correlation so you gain the shortest time-to-result and maximum information from your samples.

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with the Shuttle & Find upgrade and benefit from an easy-to-use, highly productive workflow, customized functions and correlation of your light and electron microscope. This reduces cycle times, allowing you to process a considerable larger number of samples in a shorter period of time.

As technical requirements may apply on some systems, please contact us to learn more about Shuttle & Find and how your processes will benefit from an upgrade: [microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# Shuttle & Find for ZEISS ZEN Imaging Software

## Bridge the Micro and Nano World



### Suitable Applications

Due to the versatile fields of applications, ZEISS offers two different, specialized versions of the Shuttle & Find upgrade.

#### Use the Shuttle & Find Mat upgrade for the following applications:

- Austempered ductile iron (ADI)
- Art conservation
- Electron beam lithography
- Ductile cast iron
- High performance concrete
- Zircon
- Manufacturing cleanliness
- Forensics
- Geology
- Power generation
- Metals

#### Use the Shuttle & Find Bio upgrade for the following applications:

- Neurobiology (songbird brain)
- Cell biology
- Microbiology (yeast cell sections; bacteria in root nodes)
- Immunology
- Botany
- Pharmaceuticals

### Availability

The Shuttle & Find upgrade is available for the following software:

ZEN pro (blue edition)	●
ZEN desk (blue edition)	
ZEN desk (black edition)	
ZEN system (blue edition)	●
ZEN system (black edition)	●
ZEN lite	
ZEN 2 core	
ZEN 2 starter	

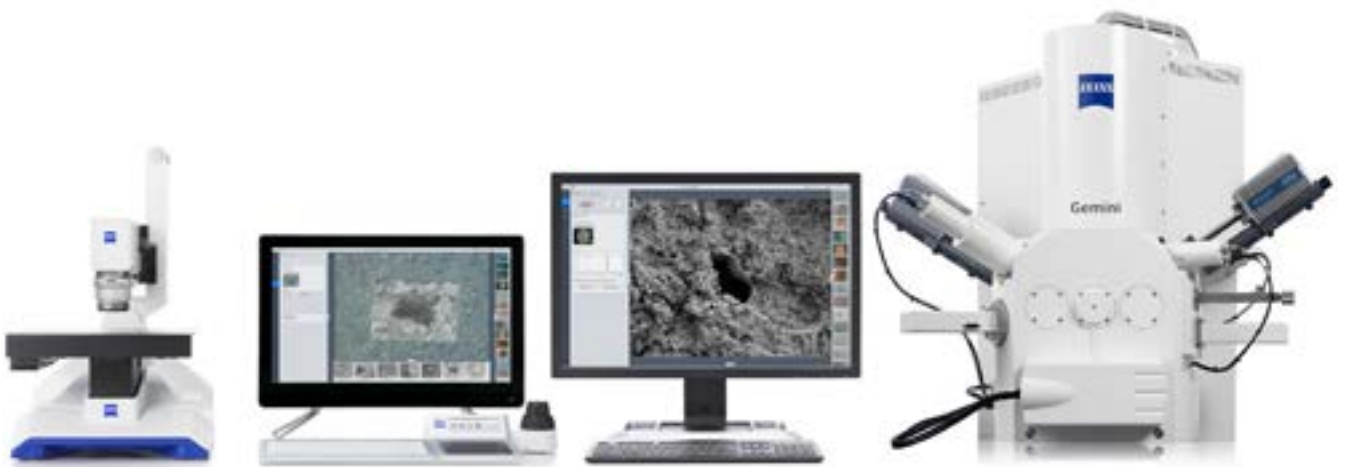
● Included in ZEN    ● Optional in ZEN





# Shuttle & Find for ZEISS ZEN Imaging Software

## Bridge the Micro and Nano World



### Availability

#### Electron microscopes

- Crossbeam series
- GeminiSEM Series
- MERLIN series
- Sigma series
- EVO series
- AURIGA series
- ULTRA series
- SUPRA series
- NEON series
- 15xx XB series
- 15xx series
- 14xx series

#### Software:

- SmartSEM

#### Light microscopes

- Axio Imager
- Axio Observer 5
- Axio Scope.A1
- Axio Zoom.V16
- Smartzoom 5
- SteREO Discovery.V12;.V20,  
LSM 7 series, LSM 8 series,  
ELYRA series

#### Software:

- ZEN 2 core
- AxioVision
- ZEN blue
- ZEN black

#### Accessories

- Specimen holder: Universal, Particle  
Analysis, Flat Samples, Geo Slide,  
Cover Glasses, TEM Grids
- Mounting frames
- Adapter Plates
- SEM Adapter
- Calibration Marker

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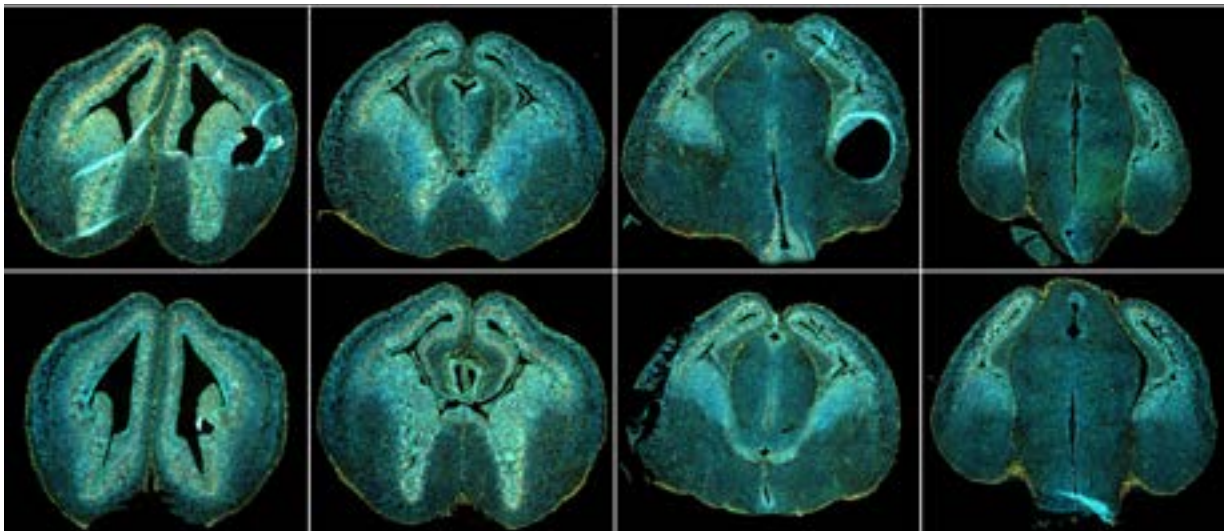
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## Tiles & Positions for ZEISS ZEN Imaging Software

Higher Throughput Thanks to Large Area Scanning



Brain overview scan

### Highlights

Increase your sample throughput and image area by upgrading your microscope with the Tiles & Positions option. With this upgrade package you will expand the range of applications tremendously: From simple panorama imaging up to automated multiposition timelapse imaging. The efficiency of your imaging system will improve as you will be able to visualize more samples than before in the same time frame.

- **Large area scanning**  
Combine high resolution imaging with large area scanning by using a scanning stage controlled by the Tiles & Positions option
- **Multipositions experiments**  
Increasing sample throughput by imaging different sample positions within one experiment
- **Flexible combination of dimensions**  
Combine the Tiles & Positions option seamlessly with other dimensions e.g. Multi Channel, Time Lapse etc.

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Tiles & Positions for ZEISS ZEN Imaging Software and benefit from higher throughput thanks to large area scanning.

As technical requirements may apply on some systems, please contact us to learn more about the Tiles & Positions upgrade and how your imaging will benefit from an upgrade:

[microscopy@zeiss.com](mailto:microscopy@zeiss.com)





# Tiles & Positions for ZEISS ZEN Imaging Software

## Higher Throughput Thanks to Large Area Scanning

### Availability

The Tiles & Positions upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input type="radio"/>
ZEN desk (black edition)	<input checked="" type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input checked="" type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN

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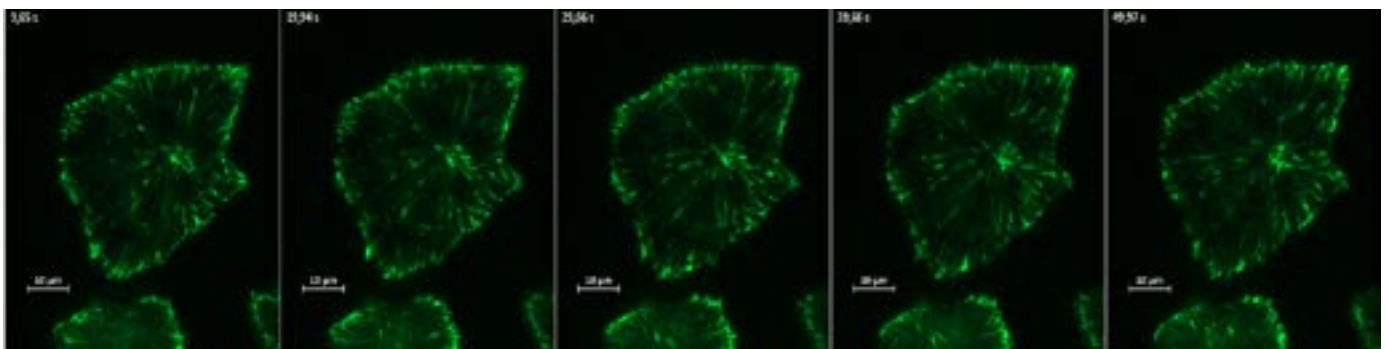
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## Time Lapse for ZEISS ZEN Imaging Software

Gain Insights into Dynamic Processes in Your Living Specimens



Time series: EB3-microtubules labelled with GFP imaged using TIRF

### Highlights

With the Time Lapse module for widefield systems you control your microscope, camera and imaging software from ZEISS. This allows you to document dynamic processes in your specimens with a compact image sequence. ZEN controls the exposure setting for your microscope with millisecond precision. Thanks to the Time Lapse option, damage is no longer caused to specimens as a result of unnecessarily long exposure times – an important requirement for your quantitative analyses of living specimens. Your most impressive images can be exported at any time into common video formats, such as .AVI or .MOV, for demonstrations and publications. The advantage: images are acquired with maximum speed and are only limited in size by the free space available on your hard drive.

- **Dynamic processes**  
Document dynamic processes in specimens to gain insight into time resolved changes
- **Reduced light exposure**  
Minimize sample damages by tightly controlled light exposure times
- **Highest frame rate**  
Get the highest frame rate by automatic determination of shortest interval
- **Flexible combination of dimensions**  
Combine Time Lapse seamlessly with other dimensions e.g. Multi Channel, Tiles & Positions etc.

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Time Lapse for ZEISS ZEN Imaging Software and benefit from insights in dynamic processes in your living specimens.

As technical requirements may apply on some systems, please contact us to learn more about Time Lapse for ZEISS ZEN Imaging Software upgrade and how your imaging will benefit from an upgrade:

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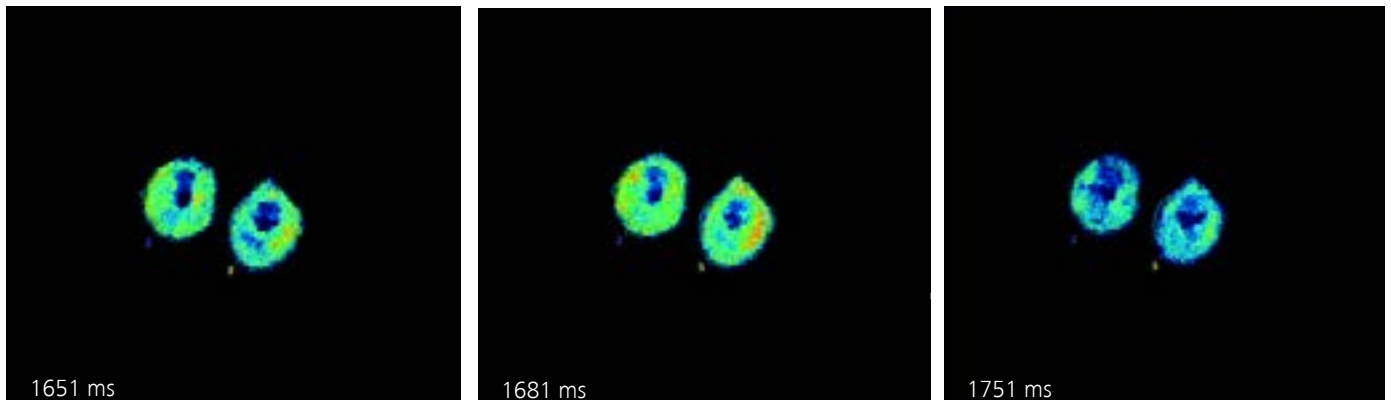




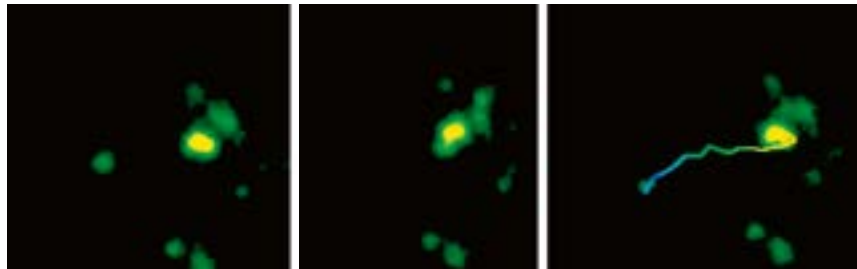


## Time Lapse for ZEISS ZEN Imaging Software

Gain Insights into Dynamic Processes in Your Living Specimens



Fluo-4 labelled cells are stimulated resulting in fast fluctuations in intensity that correspond to rising and falling calcium levels. The averaged basal intensity can be used to calculate the ratio to the intensity at any given time point.



Time lapse Imaging of an endocytic vesicle fusing with a lysosome, time scale in seconds, HeLa cells, flotillin-2-EGFP + LysoTracker, Optical Sectioning.  
Sample courtesy of Elisa May and Daniela Hermann, University of Konstanz, Germany

### Availability

The Time Lapse upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	<input checked="" type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN

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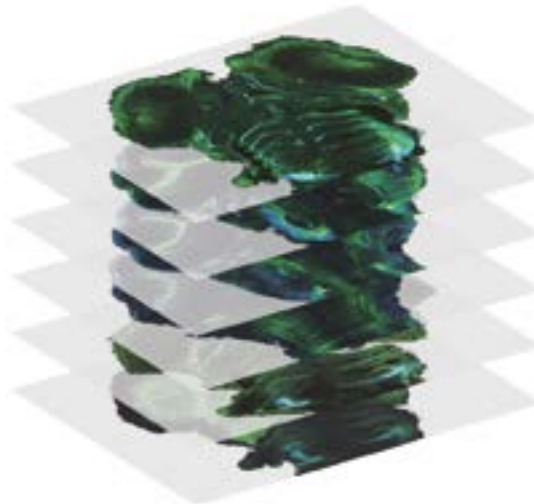
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www.zeiss.com/microscopy





# Z Stack for ZEISS ZEN Imaging Software

## Easily Acquire Axial Image Stacks



*Z Stack illustration sample*

ZEN Z Stack module helps you to acquire axial image stacks on your ZEISS microscope with motorized focus drive. The image acquisition program controls the Z-drive of your stand in precisely the right increments and synchronizes it with acquisition. ZEN can calculate the increments fully automatically, if required, or you can allocate them manually.

From now on you create your Z Stacks option with graphical support.

This assistance is even available to you dynamically during acquisition. The size of your experiment, which is saved in a compact .CZI file, is limited only by the travel range of your system and the minimum increment.

### Highlights

- **Automatic selection**  
Create the results you need thanks to automatic selection of the required sectioning step size
- **Full manual configuration**  
Be flexible thanks to fully manual configuration if necessary
- **Flexible combination of dimensions**  
Combine axial image stack acquisition seamlessly with other dimensions e.g. Multi Channel, Time Lapse etc.
- **Ease of use**  
Navigate easily and intuitively through the Graphical User Interface and benefit from automatic configuration of axial stack range

### Upgrade Your ZEISS Microscope

Upgrade your ZEISS microscope with Z Stack for ZEISS ZEN Imaging Software and benefit from easily acquiring axial image stacks.

As technical requirements may apply on some systems, please contact us to learn more about the Z Stack upgrade and how your imaging will benefit from an upgrade:

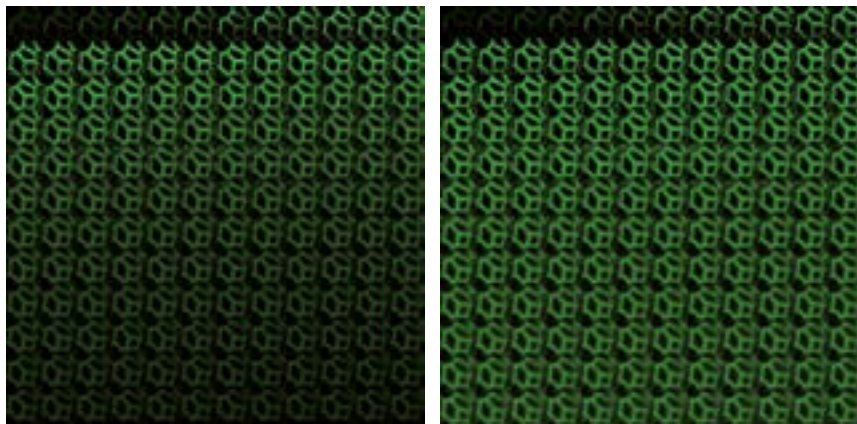
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# Z Stack for ZEISS ZEN Imaging Software

## Easily Acquire Axial Image Stacks



Gallery view of Z-stacks acquired from the same sample. Auto Z Brightness Correction, a feature in ZEN, was activated (right panel) to compensate for signal loss.

### Availability

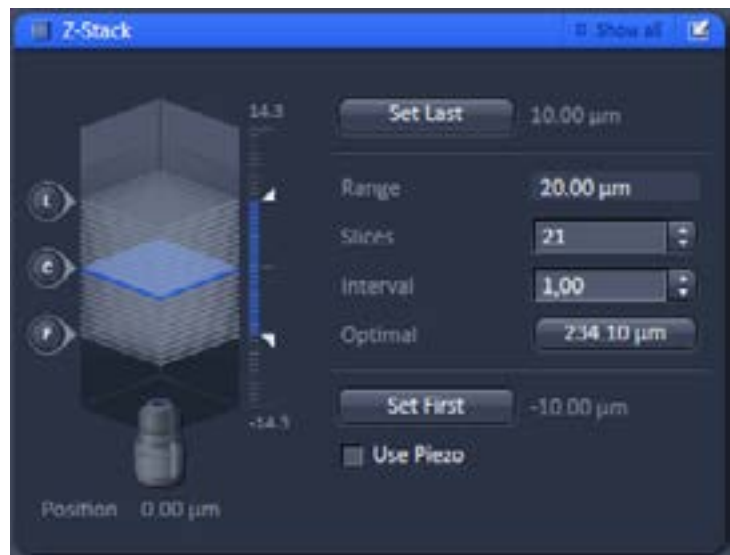
The Z Stack upgrade is available for the following software:

ZEN pro (blue edition)	<input checked="" type="radio"/>
ZEN desk (blue edition)	<input type="radio"/>
ZEN desk (black edition)	<input type="radio"/>
ZEN system (blue edition)	<input checked="" type="radio"/>
ZEN system (black edition)	<input checked="" type="radio"/>
ZEN lite	<input type="radio"/>
ZEN 2 core	<input type="radio"/>
ZEN 2 starter	<input type="radio"/>

Included in ZEN     Optional in ZEN



Z Stack graphical interface



Z Stack basic form tool of ZEN black edition

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