New perspectives for your research

ZEISS Axio Observer

Your open and flexible inverted microscope platform
with AI assisted experiment startup

zeiss.com/axio-observer

ZEISS

Seeing beyond

# Your open and flexible inverted microscope platform

In life sciences research you come up against new challenges every day – challenges that call for reproducible data from a whole range of samples in a variety of conditions. That's why you want a flexible microscope system that can be tailored to your needs, offering you lots of interfaces and extensions.

Axio Observer is your stable inverse platform for demanding multimodal imaging of living and fixed specimens. Featuring the AI Sample Finder for optimal user guidance and efficient operation, Axio Observer makes sample placement easier than ever and reduces the time to your experiments significantly. The platform uses the latest generation of LED illumination for gentle imaging and creates the optimal environment for a whole range of samples to deliver reliable, reproducible data. You can combine Axio Observer with a wealth of technologies and refine it to support your experiments precisely, choosing from a broad portfolio of options.
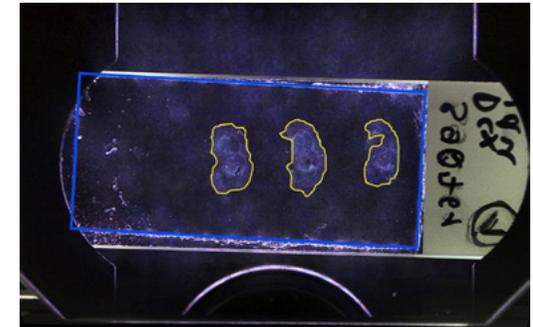
The AI Sample Finder identifies your sample carrier and detects sample areas automatically. Sample courtesy of M. Schmidt, Institute of Anatomy, Medical Faculty Carl Gustav Carus, TU Dresden, Germany.

360°

Simpler. More Intelligent. More Integrated.

Flexibility for your research

Life sciences research is a dynamic environment in which your imaging requirements are always changing. As your needs grow, Axio Observer stays with you step by step. It offers an abundance of interfaces for technologies ranging from widefield transmitted light to convenient 3D sectioning with Apotome 3, and sensitive super-resolution imaging with Elyra 7 or LSM 980 and Airyscan 2. Choose the optimal incubation equipment and enjoy easy sample access for precise micromanipulation. A great variety of integrated options makes your Axio Observer both versatile now and entirely future proof.

Guidance for your workflows

You will be amazed how easy imaging becomes when the AI Sample Finder automatically detects the sample carrier, adjusts the focus, and finds your sample region. Even with low-contrast samples, you will quickly obtain an overview image to access relevant regions with just a click. Reduce the time to image from minutes to just seconds and start your experiment right away. Let Smart Setup and the Focus Strategy Wizard guide you through the experimental setup for easy and intuitive selection of the imaging modalities for your applications.

Using ZEN Connect, acquired images can be easily combined with electron microscopy data and other modalities.

Efficiency for your experiments

Expect a remarkable increase in efficiency with the automation functions of Axio Observer. Use fast switchable LEDs or go for powerful and economic white-light sources in combination with the fast filter wheel for highest spectral flexibility and speed. Select the ideal camera from the dedicated ZEISS Axiocam portfolio or from third-party suppliers: You will always get the image quality and speed your applications require. With Definite Focus 3, focus drift during complicated experiments is a thing of the past. Whether keeping your sample in focus for long-term imaging or adapting your objective to your sample, it's all automatic with this highly organized system.

Your Insight into the Technology Behind It

AI Sample Finder: Automated sample identification for efficient imaging

Microscopes are becoming increasingly automated. For sample placement, however, microscope parts such as the condenser arm often have to be moved manually. Focus adjustment and identification of the relevant areas on the sample carrier require additional manual steps.

The AI Sample Finder automates this sequence, eliminating time-consuming manual adjustments and reducing the time to image from minutes to just seconds.

You can access all sample areas directly which allows you starting your experiment faster than ever. The AI Sample Finder greatly improves productivity as you can easily image only those regions containing sample not overlooking potentially important areas.

■ After you placed the sample on the loading position, the AI Sample Finder automatically moves it to the objective.

■ Without the need of manual sample positioning or focusing, an overview image for fast and convenient navigation is taken within seconds. Composite darkfield illumination creates a high-contrast image even for very low-contrast samples.

Sample courtesy of M. Schmidt, Institute of Anatomy, Medical Faculty Carl Gustav Carus, TU Dresden, Germany.
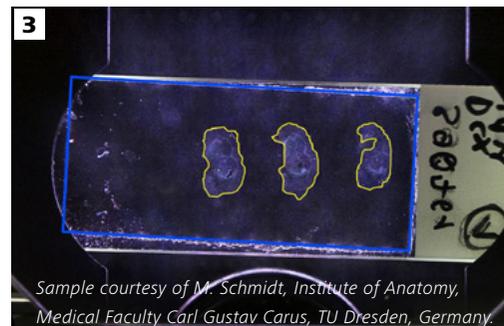
■ Intelligent routines automatically identify your sample carrier, regardless if you use a petri dish, a chamber slide, or a multiwell plate. Carrier properties are automatically transferred to the software, eliminating manual settings.
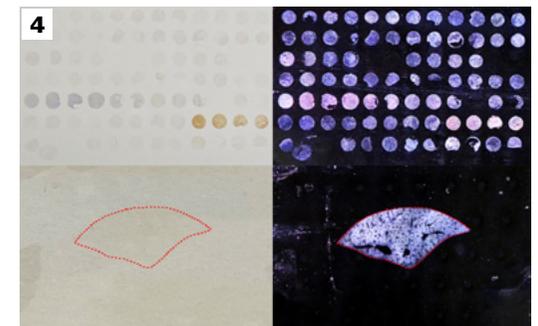
■ Your samples are reliably identified. Deep Learning algorithms precisely detect even unusual sample regions. You can navigate and access all sample areas directly which allows you starting your experiment faster than ever.

Your Insight into the Technology Behind It

See your entire sample for simple and fast navigation – with the AI Sample Finder

In science you never do an experiment only once. Statistics and controls are important to gain confidence and to verify conclusions. For interpretation of your results it's important to know additional information like the surrounding environment. A good overview image is the foundation for a detailed analysis. The AI Sample Finder enables you to see your entire sample with unmatched speed and ease of use. With ZEN Connect you can visualize to your data in a higher context combining different imaging modalities like electron and light microscopy.
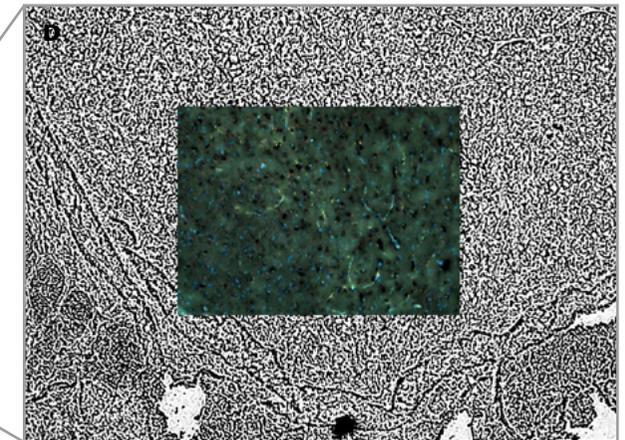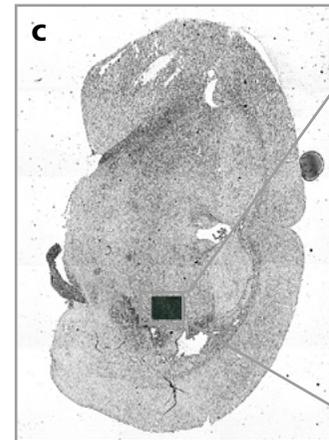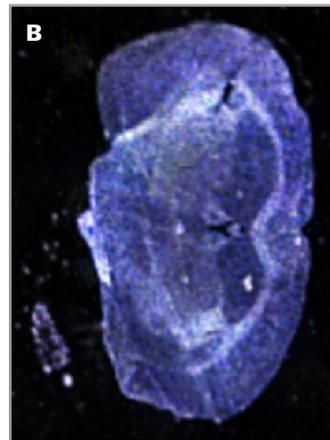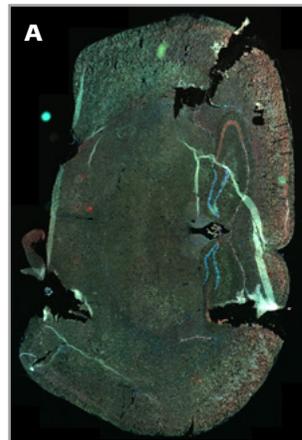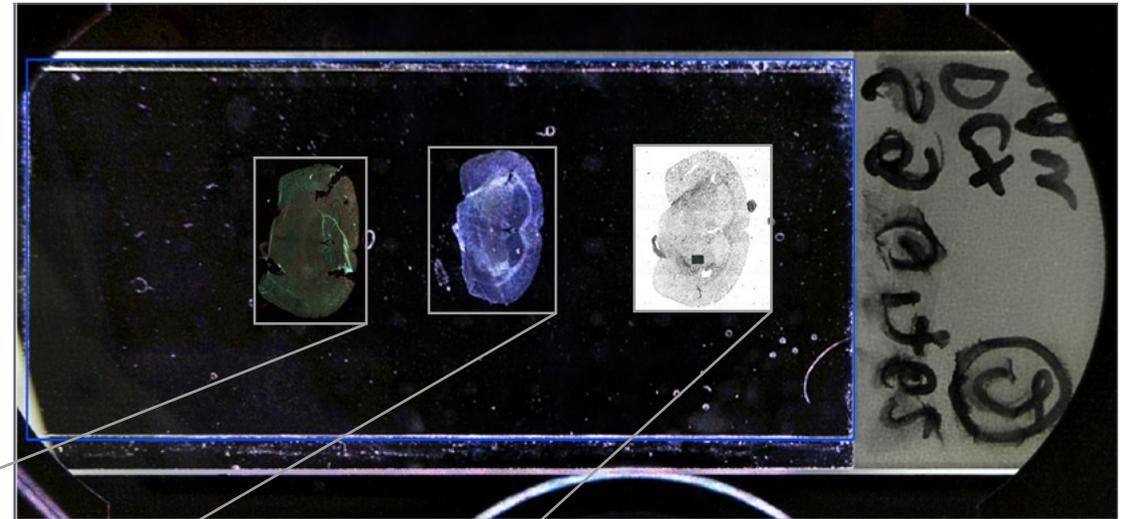
The overview image provided by the AI Sample Finder is ideally suited for navigation and orientation. You can use additional imaging modalities like fluorescence (A) to overlay the Darkfield Composite Contrast image (B) of the AI Sample Finder. Other methods like the Coherence Contrast (C) or a combination of fluorescence and Coherence Contrast (D) are possible, too. Forget about assignment issues after image acquisition. With the AI Sample Finder you always know in which sample region your experiment was conducted and how the surrounding environment looked like.

Sample courtesy of M. Schmidt, Institute of Anatomy, Medical Faculty Carl Gustav Carus, TU Dresden, Germany.

Your Insight into the Technology Behind It

Get better images – with Autocorr objectives

It takes the very best objectives with a high numerical aperture to image subcellular structures. But the wide opening angle of these objectives makes them especially susceptible to spherical aberrations. This physical effect is caused by the different refractive indices and interfaces in both the optical system and the sample. With the introduction of Autocorr, your Axio Observer now supports a new generation of objectives.

With Autocorr you adjust the optics of your microscope to your sample, with a simple slider in ZEN imaging software. Expect crisp contrast even deep inside in your specimen. And with greatly improved fluorescence detection, you will get better data while less excitation intensity will improve the viability of you samples.
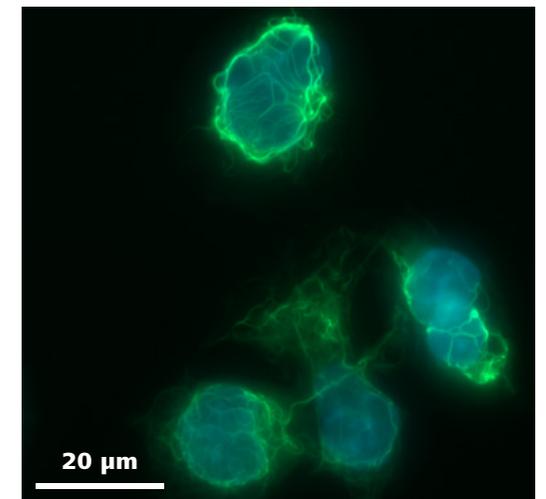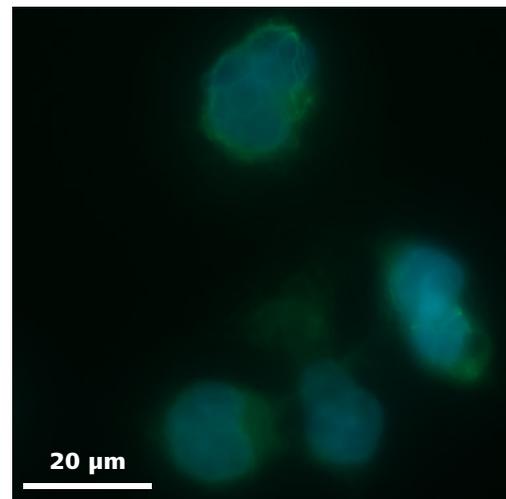
SK8 K18 mouse cells. Vimentin stained with Alexa 488 (green), nuclei stained with DAPI (blue). Left image without correction of cover slip thickness, right with applied correction.

Your Insight into the Technology Behind It

**Keep a sharp eye on your goals –
with Definite Focus 3**

Acquiring time-lapse data from living samples can be tricky. Changing conditions such as room temperature influence the microscope as well as the sample carrier and can cause focus drift.

Definite Focus 3 compensates for this drift and keeps your samples in focus. With higher accuracy and precision even your most challenging multi-day, multi-position time-lapse experiments will yield sharp and high contrast images.

Here's how it works: an infrared LED is projected through a grid onto the bottom of the sample carrier. Any change in the focal position of the sample will be indicated by a change of the grid image on the carrier bottom. An integrated camera monitors the shift while the focus drive of the stand moves to compensate for the drift in real-time. Using ZEN imaging software, simply choose a focus strategy and set up your experiment: all compensation happens automatically in the background, without interfering with your acquisition.

Definite Focus 3 is integrated into the nosepiece of your Axio Observer 7.
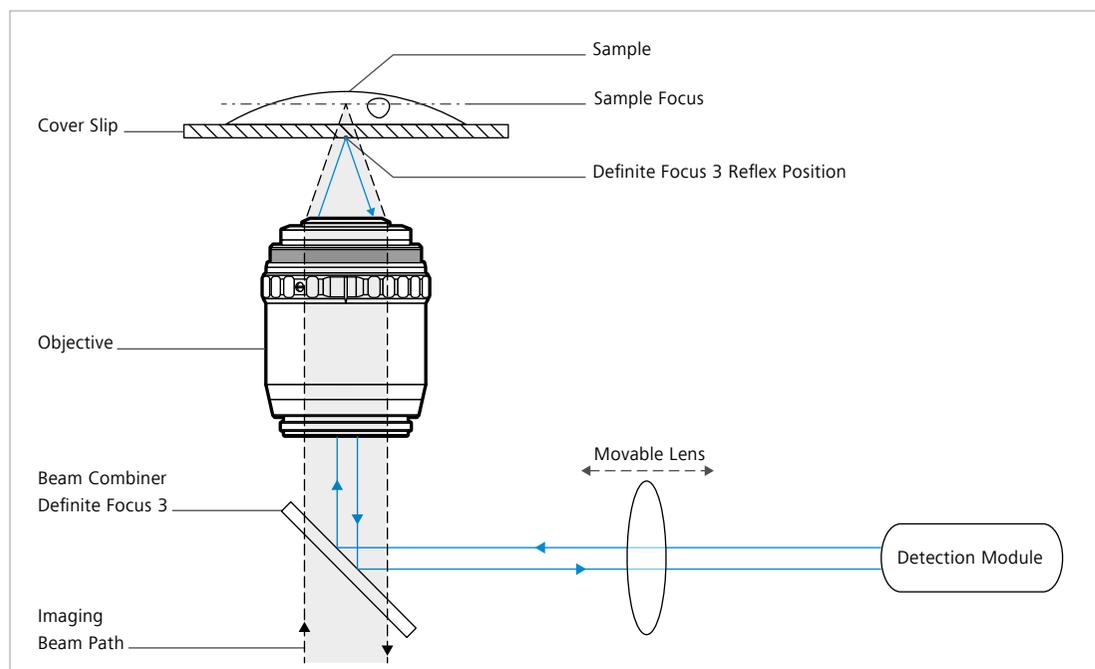
Schematic beam path of Definite Focus 3.

Your Insight into the Technology Behind It

Efficient LED light sources for gentle fluorescence imaging

Your tasks in Life Sciences often require specific fluorescent labels. These labels need to be excited by exactly the right wavelength or even multiple wavelengths. Depending on the type of your experiments you also need stable and robust illumination to obtain reproducible data. LEDs convert electrical power into light more efficiently than other light sources. In comparison, they consume approximately 80 % less energy and do so over extremely long lifetimes. You will never again have to change a metal halide-, Xenon or Mercury-arc lamp. This saves you both money and time and protects the environment, too.

Depending on the model organism or cell line you are investigating, you will face many possible spectral combinations. That calls for high spectral flexibility in the fluorescence beam path.
To observe fast processes in living samples, you need a system that can alter the imaging conditions rapidly.

Axio Observer uses advanced Virtual Filter technology: a dual filter wheel for emission filters and dichroics that enables flexible combinations of wavelengths. Combine it with any white light source and the fast excitation filter wheel or use the unique multicolor Colibri LED light source to get all the benefits of high efficiency filters, full spectral flexibility, high excitation intensity and extremely fast switching times.

Xylis LED light source allows you to get a high and reproducible light output without warm-up times over the entire life span.

Virtual Filters allow a wealth of excitation and emission combinations for fluorescence imaging.

Excitation filter wheel for high speed multicolor imaging.

Expand Your Possibilities

**Use fast, gentle and reproducible
LED illumination – with Colibri**

Fluorescence microscopy calls for a light source that produces just the right wavelength and enough intensity to excite the fluorescent dyes and proteins in your samples. That makes Colibri 5 and Colibri 7 with their fast LED illumination system the perfect choice for all your fluorescence imaging. Narrow-band LED excitation reduces cross-stimulation while increasing the contrast and SNR of your images. The LEDs are ideal for gentle live cell imaging: they only emit light within a narrow part of the spectrum and have no unwanted, cell-damaging UV leakage. Colibri is fully

integrated into ZEN imaging software, giving you the benefit of extremely fast switching times. Using a calibration diode, Colibri automatically measures and calibrates the light output of the diodes, resulting in reproducible excitation intensities over its entire life span. The LEDs can be turned on and off in microseconds with precise control of excitation intensities to protect your sample. This makes your imaging fast, and saves lamp live, as they are switched off instantly, whenever acquisition is paused.

Your Colibri light source can house LEDs with a broad variety of wavelengths and intensities. Colibri 7 gives you seven individually adjustable excitation wavelengths. With Colibri 5, you can use up to four different LEDs for fluorescence excitation of your sample. You always get enough excitation power to shorten exposure times and to speed up your image acquisition, if necessary. Choose the ideal configuration to exactly match your applications and budget.
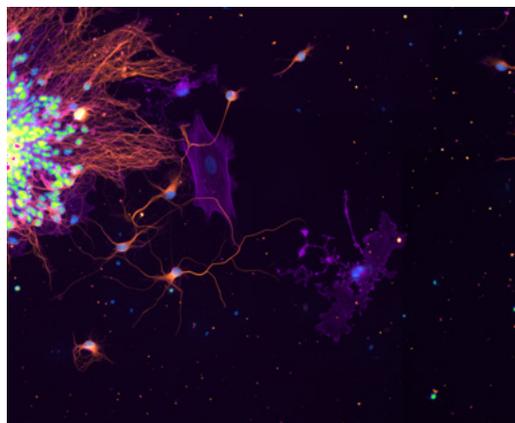
Primary cultures of rodent hippocampal neurons, stained for microtubules (orange), actin (purple) and nuclei (blue-green). Courtesy of A. Patil, Drexel University College of Medicine, USA

Colibri 7 mounted to stand for full intensity – adjustment free and without an aging light guide.
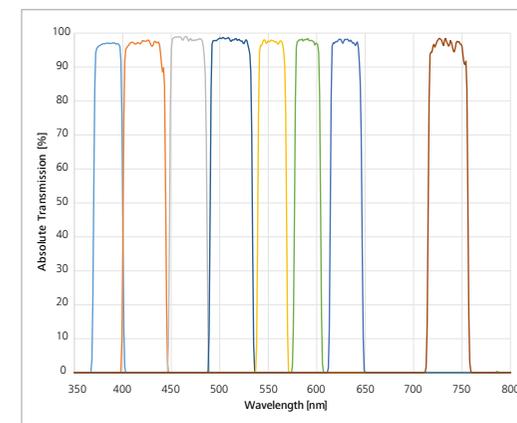
Colibri allows you to specifically excite fluorophores over the entire spectral range from UV to far red.

Expand Your Possibilities

Automated, hands-free water immersion for reliable data acquisition from start to finish

Immersion media between the sample and the objective is required for high-resolution imaging. This can be a challenge for some experiments using water as immersion media. With automated multi-position data acquisition, one application of immersion media might not be sufficient as the sample moves to different locations. With live sample experiments, immersion water can evaporate over long periods. Manual addition of immersion media risks loss of data points or even microscope damage from user error; it is also tedious and inefficient. The Autoimmersion Module for ZEISS Axio Observer 7 widefield and confocal systems is your automated, easy-to-use solution for maintaining immersion media for water immersion objectives.

Improve your efficiency and throughput

With the ZEISS Autoimmersion Module, you can design complex experiments for unsupervised data collection where previously you were committed to stay near the microscope to ensure there was always enough immersion media. This includes extended live cell imaging experiments and / or multi-position data acquisition. Dedicate your time to other projects while your microscope collects data autonomously. Set up imaging acquisition during non-working hours, knowing that the ZEISS Autoimmersion Module will enable reliable data collection through the end of your experiment.

Increased Throughput
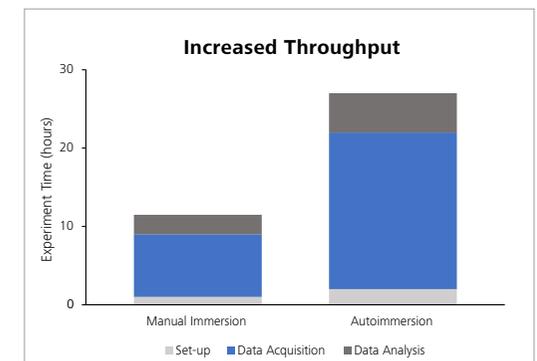
Improve your throughput by up to 2.5-fold by designing experiments that collect data during non-working hours, such as overnight or over the weekend.

Expand Your Possibilities

Open Application Development (OAD) is your interface to the ZEN imaging software

- Use Python scripts to customize and automate your workflows.
- Integrate external image analysis applications into your workflows.
- Exchange image data with external programs like ImageJ, Fiji, MATLAB, KNIME or Python.
- Use feedback functions for smarter and dynamic experiments
- Get more reliable data in less time. It's your choice.

OAD enables the analysis of data acquired with ZEN imaging software by other programs like ImageJ. Transfer your results back to ZEN for further analysis and display.

Expand Your Possibilities

As your needs grow, you can always expand your Axio Observer. The flexible platform concept provides numerous defined and well documented interfaces. Upgrade new accessories from a broad portfolio of ZEISS solutions or third party offerings.

Choose the right objectives for your application from a broad portfolio of lenses.

Use Duolink and ZEN imaging software to perform high speed imaging with two spectrally separated channels simultaneously.

Select a microscope camera with the sensitivity, resolution and imaging speed you need.

Expand your system with a range of complementary 3D imaging methods.

Combine your Axio Observer with stable incubation options for long-term live cell imaging.

Create long-term live cell and multi-position experiments with automated water immersion.

Tailored Precisely to Your Applications

Typical Applications	Task	ZEISS Axio Observer offers
Label-free live cell cultures	Evaluate and document cell culture status	■ PlasDIC contrast for high-resolution images through plastic vessels ■ Objectives with long working distance and correction rings to enhance contrast and resolution ■ Sample carriers and stages for large cell culture flasks ■ Large field of view imaging (field number: 23 mm)
Transfected live cell cultures	Evaluate and document transfection rate and transfection stability	■ Gentle fluorescence excitation by Colibri 5 and 7
Label-free fixed and thin tissue slices or small organism	Document and evaluate cell and tissue morphology and growth state	■ Optimized DIC for low magnification, high numerical aperture multi-immersion lenses
Reproductive or adherent cells and cell cultures	Mechanical manipulation of cells (e.g. injection of germ cells), injection of dyes and other biologically active substances	■ Phase contrast, improved Hoffmann Modulation contrast (iHMC), DIC contrast ■ Support for micromanipulators from Narishige, Eppendorf and Luigs & Neumann ■ Heated microscope stage and mounting frames, heating inserts
Living neuronal or muscular cell culture or tissue slices	Observation of fast densitometric, ratiometric and electrical signals	■ Water- and silicon oil immersion objectives; Autoimmersion Module ■ Apochromatic and UV-enhanced reflected-light illuminator ■ Double camera adapter Duolink ■ Highspeed filter wheels and shutters ■ Fast multicolor LED illumination with Colibri 5 and 7 ■ High efficiency filter sets ■ Z-PIEZO (500 μm) with large travel range
Fixed immunfluorescence labelled tissue or cell culture samples	Identification, quantification and qualification of cell types, cell-, tissue and protein markers in 2D and 3D samples	■ Definite Focus 3 ■ Dual filter wheel ■ Apotome 3 ■ Piezo stage for high speed, high precision XY positioning ■ Various mounting frames for different sample carriers
Multi-labelled living tissue section, organs, organotypic-, spheriod or cell culture preparations	Long-term observation of physiological and morphological parameters in 2D/3D	■ Autocorr objectives ■ Definite Focus 3 ■ Special objectives for incubation ■ Life cell imaging objectives ■ Long distance objectives ■ Water and silicone oil immersion objectives; Autoimmersion Module ■ Aqua Stop II ■ Incubation, CO_2 and O_2 control ■ Camera adapter for large field of view imaging (field number: 23 mm) ■ Colibri 5 and 7
Microbiomes, bacteria and yeast cultures	Identification and characterisation of cell wall, cell cycle and host-parasite interaction	■ C-Apochromat 100×/1.25 W Corr ■ Plan-Apochromat 150×/1.35 Glyc DIC Corr

ZEISS Axio Observer at Work
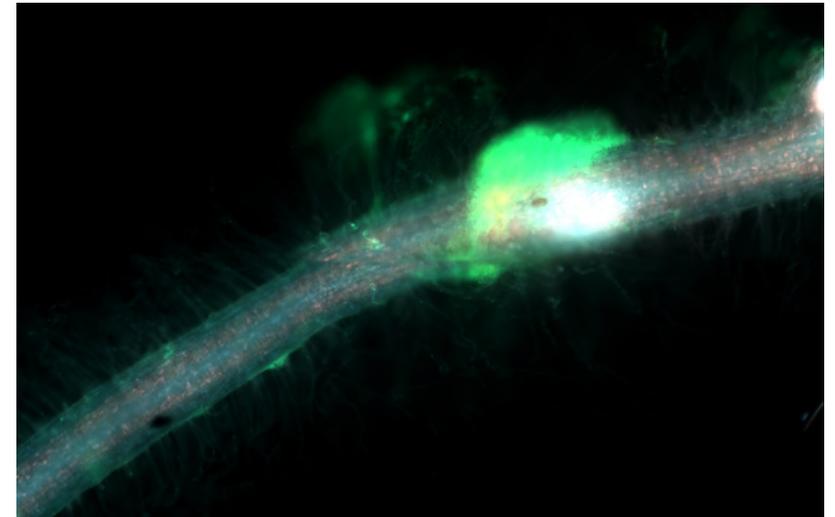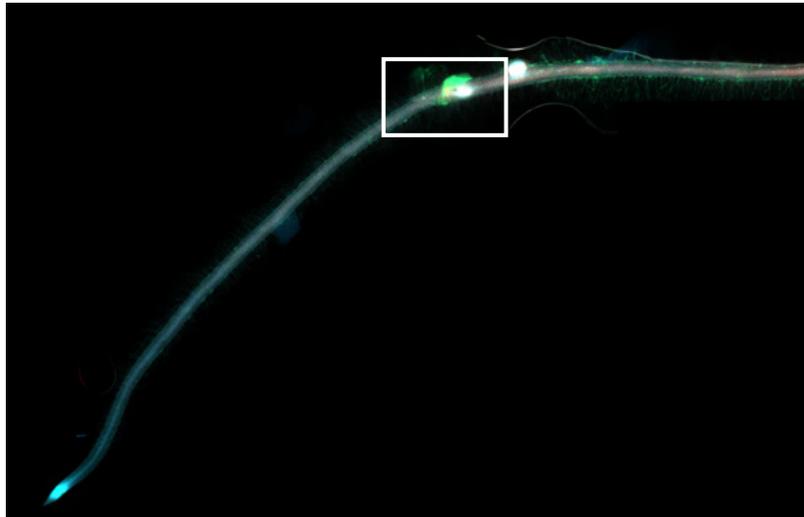
Autofluorescence of a Lotus Japonicus root infected with symbiotic bacteria stained with mcherry.
Courtesy of F. A. Ditengou, University of Freiburg, Germany.
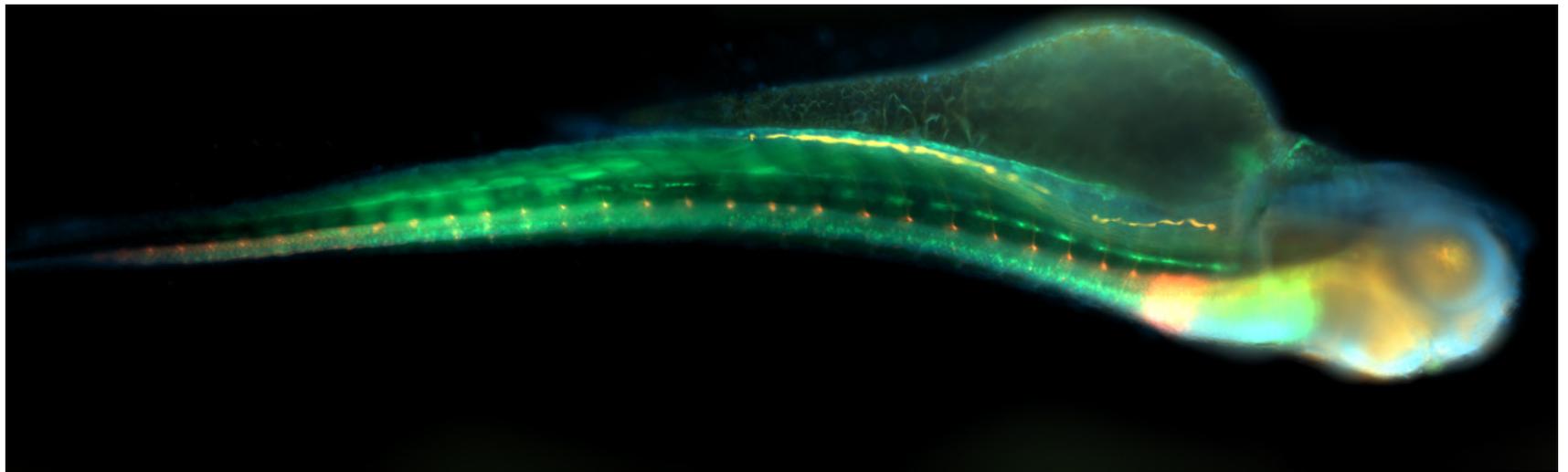
Transgenic zebrafish larvae at 4 days post fertilization staining for: Glial fibrillary acidic protein, acetylated Tubulin, GFP and DNA. Embedded in 1.2 % low melt agarose.
Courtesy of H. Reuter, Leibniz-Institute on Aging – Fritz-Lipmann-Institut e.V. (FLI), Germany.

ZEISS Axio Observer at Work

50 µm

▶ Click here to view this video
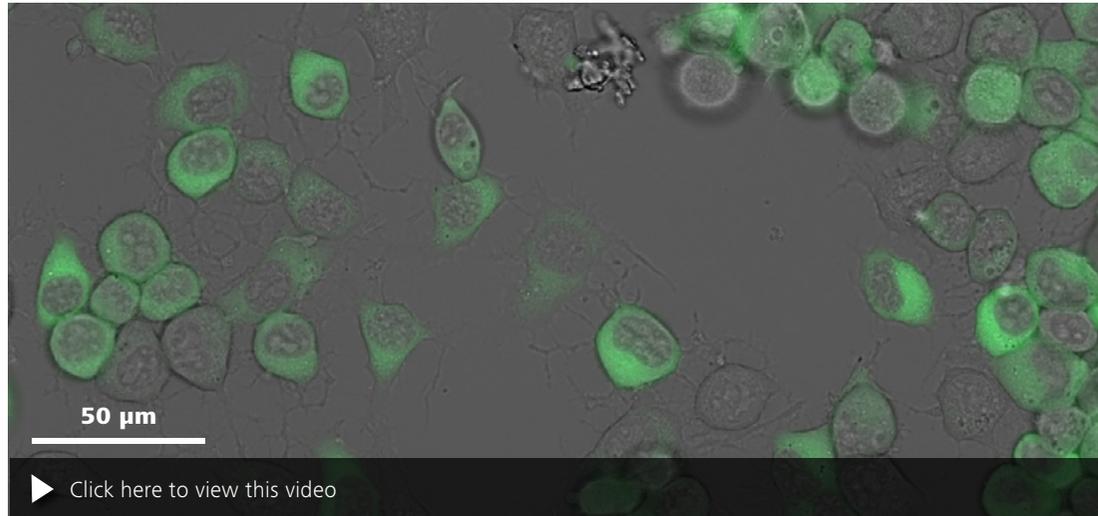
HeLa cell culture with cytosolic eGFP. Proliferation imaged over 16 hours.

▶ Click here to view this video
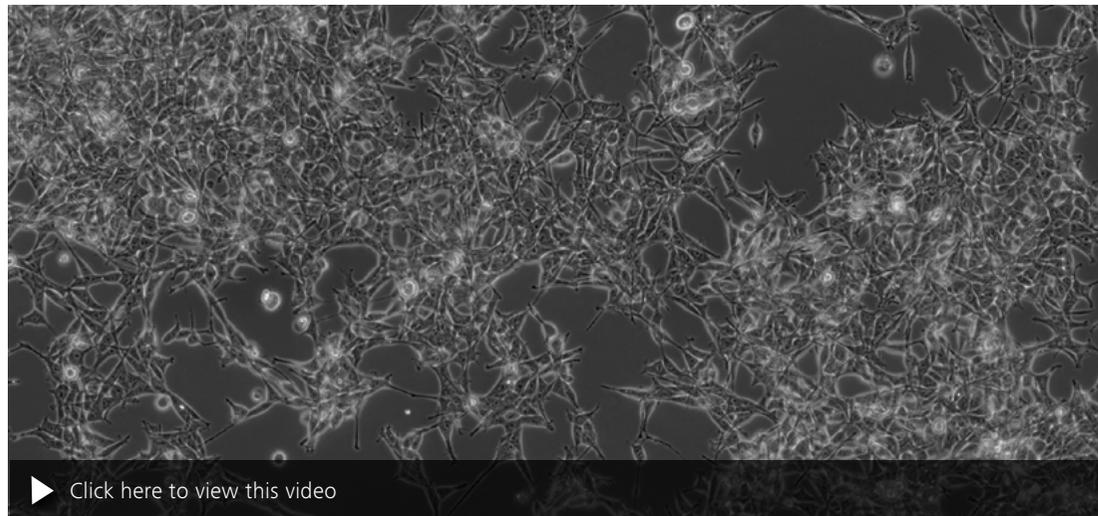
HEK 293 cells. Long-term time lapse recording of 3 × 3 tiles with 240 s interval. Acquired with Axiocam 506 mono, stabilized by Definite Focus 3 at 10 s interval.

ZEISS Axio Observer at Work

SK8 K18 mouse cells. Vimentin stained with Alexa 488 (green), nuclei stained with DAPI (blue).

▶ Click here to view this video
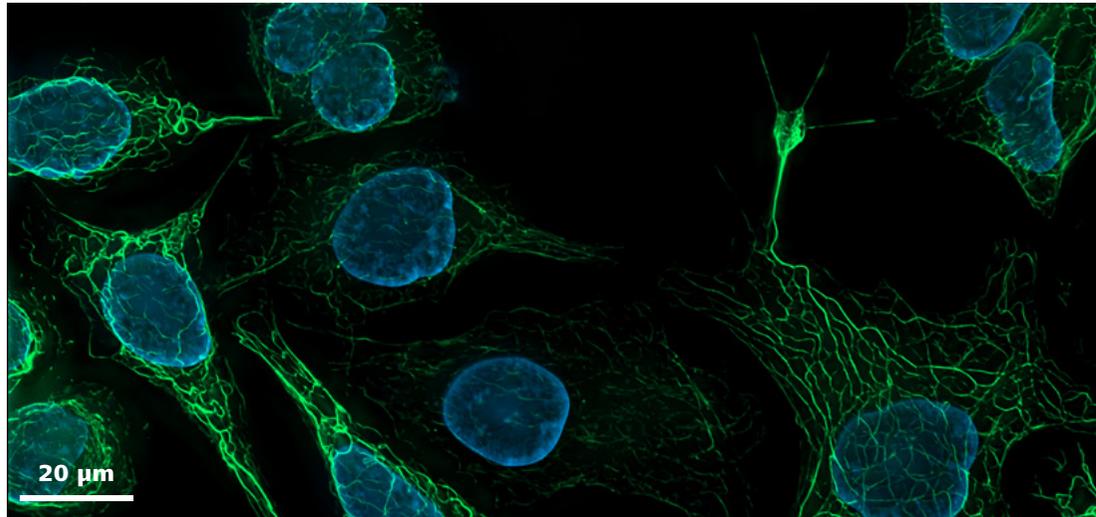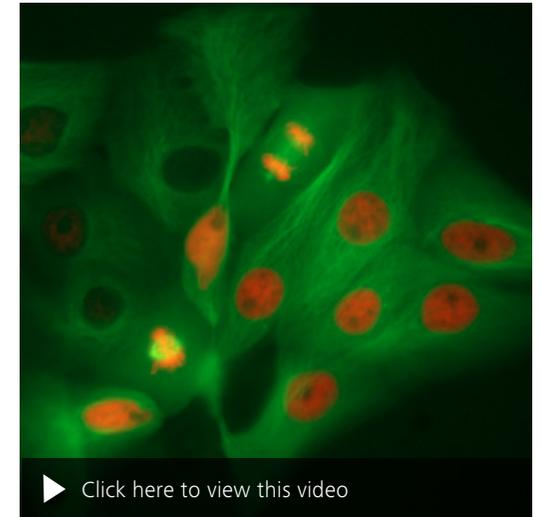
LLC PK1 cells. Time lapse recording of undisturbed cell division.
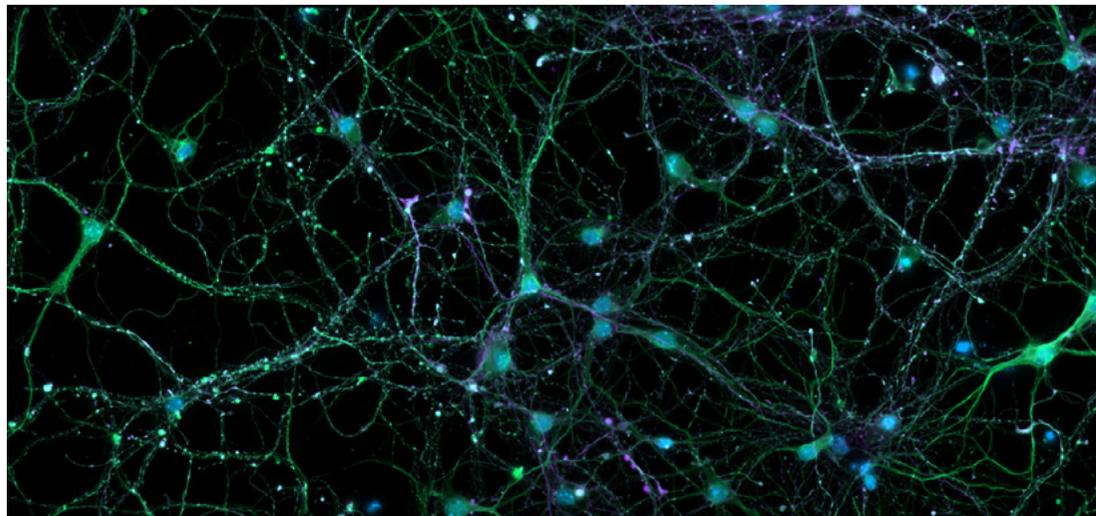
Cortical neurons stained for DNA, microtubules and microtubule-associated proteins.
Courtesy of L. Behrendt, Leibniz-Institute on Aging – Fritz-Lipmann-Institut e.V. (FLI), Germany.

ZEISS Axio Observer at Work

Live cell experiments over extended periods with automated immersion

HEK KO PEX5 cells expressing eGFP with a photocaged peroxisomal targeting signal type 1 were reconstituted with the peroxisomal import receptor PEX5. A light induced conformational change of the photocage leads to exposure of the peroxisomal targeting signal. If the WT PEX5 is expressed, accumulation of the eGFP signal in the dotted peroxisomes can be monitored (top row). In case of the mutated PEX5 (bottom row), even after 18 hours, no peroxisomal import could be detected.
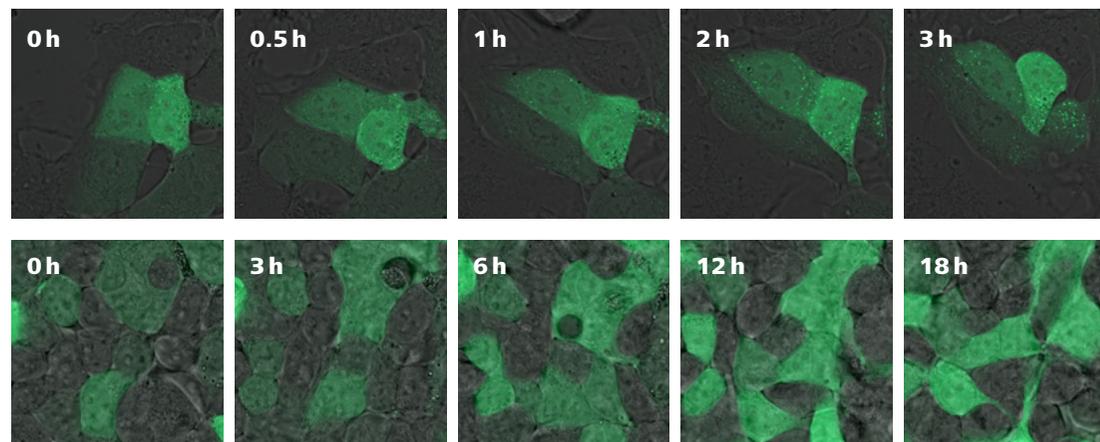
Sample courtesy of K. Reglinski, Institute for Applied Optics and Biophysics, Friedrich-Schiller-Universität Jena, Germany.

Multi-position, extended time lapse experiment with automated immersion

When working with living samples, you might not know where your event of interest may occur. To capture the uptake of nanoparticles by macrophages, many locations from a multi-well plate are acquired as well as multiple z-planes over several hours at 37°C using re-immersion. The region shown above is a subset of the much larger dataset that was captured using automated imaging and shows the uptake of nanoparticles inside the cells (top row). The surface of the cells were also imaged to verify that the nanoparticles are inside the cells and not simple sitting on the cell surface (bottom row).
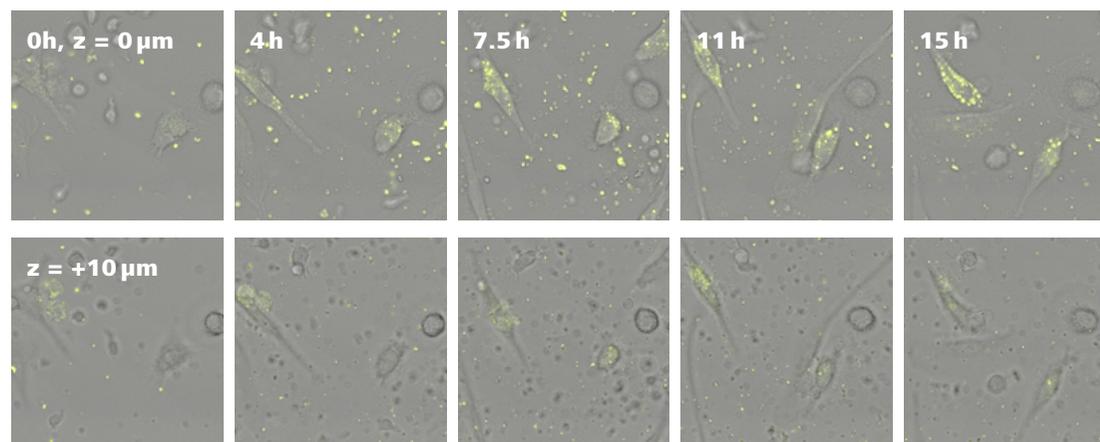
Sample courtesy: F. Páez Larios and C. Eggeling, Institute for Applied Optics and Biophysics, Friedrich-Schiller-Universität Jena, Germany.

ZEISS Axio Observer at Work

Accurate data acquisition in aqueous samples

For researchers testing different sample conditions for a specimen, such as drug responses, or measuring a full binding isotherm by fluorescence correlation spectroscopy (FCS), using multi-well specimen holders and automated data collection can dramatically improve throughput and increase efficiency. However, acquiring accurate measurements is critical for these types of experiments.

The ZEISS Autoimmersion Module is both fast and exact, ensuring your data collection is accurate even when moving to multiple positions of a multi-well specimen. As shown on the right, researchers prepared wells with different concentrations of a fluorescently labeled protein and were able to accurately measure the binding curve to red fluorescent liposomes using fluorescence cross-correlation spectroscopy (FCCS).
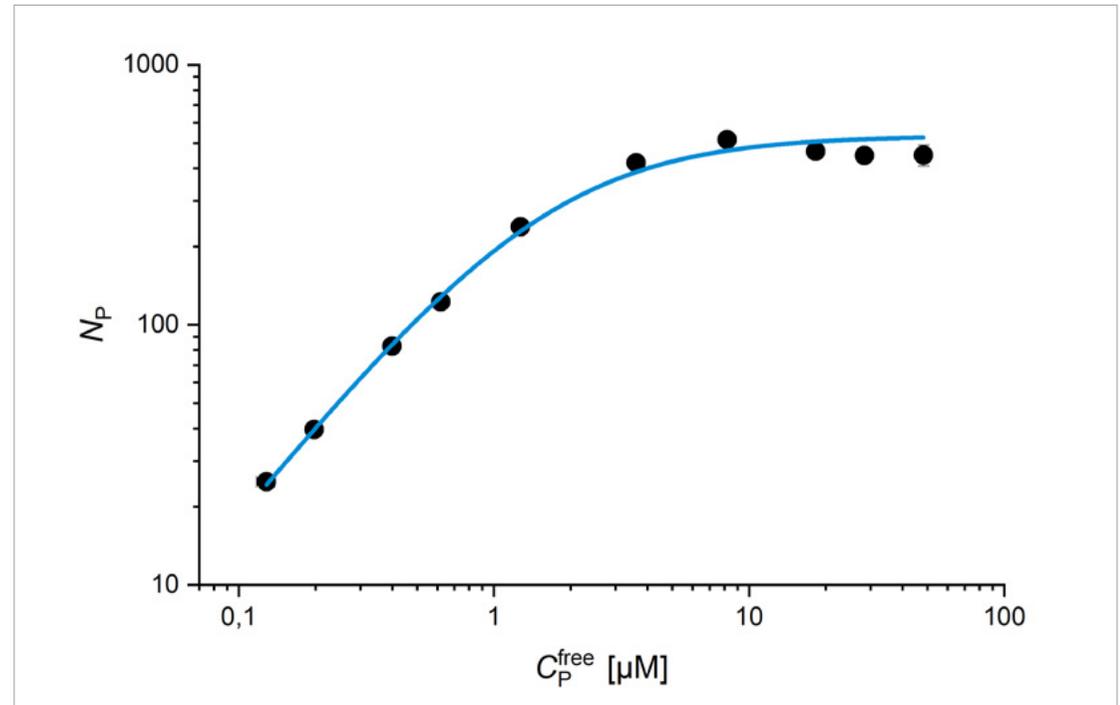
Red fluorescent small liposomes and different concentrations of Sar1p protein (partially labeled with Alexa Fluor 488) were mixed in a 96 multi-well plate and measured automatically over 15 hours. Krüger et al., Biophys. J. 2017.
Sample courtesy of C. Haupt and K. Bacia, University of Halle, Germany

Your Flexible Choice of Components
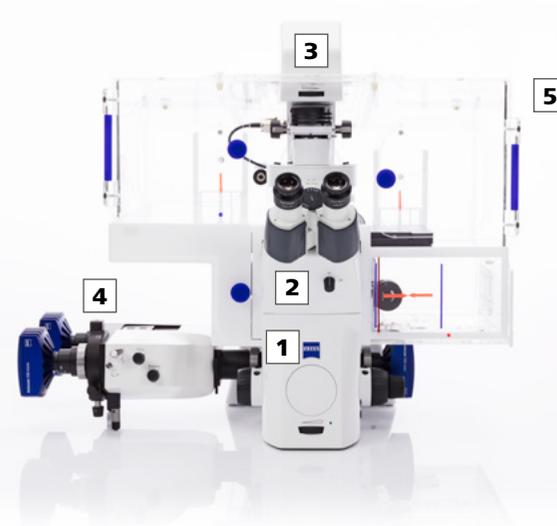
1 Microscope

- Axio Observer 3: manual stand with encoded components
- Axio Observer 5: manual stand with encoded nosepiece and encoded or motorized reflector turret
- Axio Observer 7: motorized stand with motorized Z-drive
- AI Sample Finder
- Light Manager and Contrast Manager
- Depending on stand version:
  Manual, coded or motorized Optovar turret, available magnifications: 1.25×, 1.6×, 2.5×; Manual, coded or motorized 6× reflector turret

2 Objectives

- C-Apochromat autocorr
- C-Apochromat
- LD LCI Plan-Apochromat autocorr
- Plan-Apochromat
- EC Plan-Neofluar
- LD A-Plan
- Temperature isolated i LCI Plan-Neofluar

3 Illumination

- UV/VIS Reflected Light Beampath for fluorescence with high speed shutter, Filter wheel excitation 8-pos. mot. for filters d = 25 mm, CAN; Dual filter wheel mot. for beam splitting and emission, CAN; high efficiency filter sets
- Software controlled high-power LED white light source
- Fast multicolor LED illumination system Colibri 5 and 7
- Transmitted light beam path with manual or motorized condensor with long-working distance
- VIS-LED for fast acquisition
- Differential Interference Contrast (DIC), PlasDIC, Phase Contrast, improved Hoffman-Modulation Contrast (iHMC)

4 Imaging Systems

- Apotome 3
- LSM 900 with Airyscan 2
- LSM 980 with Airyscan 2
- Elyra superresolution systems

5 Accessories

- Broad incubation portfolio (heatable mounting frames, heating inserts, CO_2 and O_2 controller)
- High precision / high speed motorized scanning stages and a range of manual stages
- Z-PIEZO stage insert with 500 µm travel range
- Adjustable dual camera adapter Duolink
- Autoimmersion Module
- All Axiocam microscope cameras and a wide range of high-end 3rd party cameras

6 Software

- ZEN (blue edition), recommended modules: Tiles & Positions, Experiment Designer, Physiology (Dynamics), Deconvolution, 3Dxl Viewer – powered by arivis®

System Overview

Filter module 2-position Duolink
426143-9100-000

Beam splitter 50%, 26x36mm
446310-0002-000

For use with white light sources:
Filter module wl CFP/YFP Duolink
426143-9110-000
Filter module wl GFP/mRFP Duolink
426143-9130-000

For use with multispectral light sources
e.g. Colibri 7:
Filter module ms CFP/YFP Duolink
426143-9120-000
Filter module ms GFP/mRFP Duolink
426143-9140-000

[Camera with C-mount]

[Camera with SLR-bayonet]

**Camera Adapter
T2-C 1" 1.0x**
426104-0000-000
**Camera Adapter
T2-C 1" 1.0x, adjustable**
426105-0000-000

**T2-adapter
for SLR-camera**
e.g. 416013-0000-000
(by choice)

**Camera Adapter
60N-C 2/3" 0.5x**
426112-0000-000
**Camera Adapter
60N-C 2/3" 0.63x**
426113-0000-000
**Camera Adapter
60N-C 2/3" 0.63x;
rotatable +/−2°**
426113-9010-000
**Camera Adapter
60N-C 1" 1.0x**
426114-0000-000

Camera Adapter T2-T2 DSLR 1.6x
426115-0000-000
Camera Adapter T2-T2 SLR 2.5x
426116-0000-000

Adapter 60N-T2 1.0x
426103-0000-000

**Double Adapter Duolink
60N - 2x60N man.**
426143-9000-000
(only at sideport)

Eyepiece eyecup
444801-0000-000

**Eyepiece
PL 10x/23 Br. foc.**
444036-9000-000
Eyepiece E-PL 10x/23 Br. foc.
444235-9901-000
(more eyepieces and reticles
by choice)

Auxiliary microscope, d=30
444830-9902-000
(optional in combination
with Binocular tube
425537-0000-000)

**Binocular phototube 45°/23
with sliding prism**
425536-0000-000

Binocular tube 45°/23
425537-0000-000

**Binocular ergotube 25°/23,
50 mm horizontal adjustment**
425535-0000-000

**Definite Focus.2
incl. 6-position nosepiece, H DIC M27 mot. ACR**
424533-9003-000
Definite Focus.2 upgrade incl. nosepiece mot. ACR
424533-9013-000
(Retrofit for Axio Observer 7 and Axio Observer.Z1)
Beam combiner module UV/VIS
424533-902 1-000
Compensation module Definite Focus
424533-9041-000
**IR blocking filter,
mounted (BP 400–750 nm), d=32 mm**
424533-9070-000

(Objective rings ACR by choice)

6-position nosepiece, H DIC M27 mot.
424527-0000-000
6-position nosepiece, H DIC M27 mot. ACR
424528-0000-000
6-position nosepiece, H DIC M27 cod.
(included in stands 3 and 5)

**Dual filter wheel mot. for
beam splitting and emission; CAN**
452358-9010-000 (for stands 7/Z1)
(recommended filter sets HE
by choice)
**Analyzer DIC
for Dual filter wheel**
428112-9000-000

Aqua Stop II
431716-0000-000

Antiglare screen
000000-1109-741

Axiocam
(by choice)

**Camera with
C-mount 2/3"**
(by choice)

**Adapter Video V200 C 2/3" 0.63x
at frontport**
000000-1071-171

[Camera with SLR-bayonet]

T2-Adapter
(by choice)

**Adapter V200 T2 2.5x for SLR
at frontport**
000000-1279-493

Sideport 60N L, 2 switching positions
425150-0000-000
Sideport 60N L 100, 2 switching positions
425151-0000-000
Sideport 60N L, 3 switching positions
425152-0000-000
Sideport 60N R, 3 switching positions
425153-0000-000
Sideport 60N L/R, 3 switching positions
425154-0000-000
Sideport 60N L/R 100, 3 switching positions
425155-0000-000
Sideport 60N L 80/R 100, 3 switching positions
425165-0000-000

(for stand 3 sideport left only;
2 switching positions only stands 3 and 5)

**Anti vibration set
Axio Obserer**
431007-9000-000

Baseport 60N
425126-0000-000

Path deflection to the tube
000000-1069-227
(included in stand 3)

Beam path switching
000000-1069-228
(for stand 5)
Beam path switching mot.
000000-1069-229
(for stand 7)

Z-drive operation, flat; right
430051-0000-000
Z-drive operation, flat; left
430052-0000-000
(included in stand 5, flat left)
(for stand 3/7 optional
flat right or flat left)
Z-drive, 13 mm travel, man.
431017-0000-000 (for stands 3, 5)
Z-drive, 13 mm travel, mot.
431018-0000-000 (for stand 7)

For stands 3 and 5:
6-position reflector turret man. for P&C modules
424945-0000-000

For stands 5 and 7:
6-position reflector turret cod. for P&C modules
424946-0000-000
6-position reflector turret mot. for P&C modules
424947-0000-000
6-position reflector turret mot. ACR for P&C modules
424948-0000-000

Stage attachment Z PIEZO WSB 500
432339-9000-000
with:
Controller Z PIEZO WSB 500
432339-9010-000
Control wheel Z PIEZO WSB 500
432339-9020-000
**Stage insert Z PIEZO WSB 500
Universal**
432339-9030-000
**Stage insert Z PIEZO WSB 500
for multi well plates**
432339-9040-000
**Stage insert Z PIEZO WSB 500
for Heating Inserts P S1/Mxx S1**
432339-9050-000

Trackball XY; CAN
432903-9000-000

Joystick XY; CAN
432903-9011-000

**Electronic
Coaxial Drive; CAN**
432904-9901-000

Optional:
**Extension cable
for stage control 1.6 m**
000000-2121-749

Note:
For usage with joystick, trackball or
coaxial drive. Recommended for
adaptation of cable length when
a docking station is used.

Protection filter for reflector turret
000000-1068-113

Reflector module FL EC P&C
424931-0000-000
Reflector module FL EC ACR P&C
424933-0000-000
Reflector module FL EC ACR P&C, programmable
424941-9060-000

**Analyzer module DIC ACR P&C
for transmitted light**
424921-9901-000
**Analyzer module DIC ACR P&C shift free
for transmitted light**
424932-9901-000
**Analyzer module Pol ACR P&C
for transmitted light**
424937-9901-000

**Mounting Frame K
for specimen slides 76x26 mm**
451341-0000-000
Universal mounting frame K-X
451353-0000-000
Universal mounting frame K
451352-0000-000
Universal mounting frame K-Duo
000000-1116-078
Universal mounting frame K-M
000000-1272-644 (without fig.)
Mounting frame K for multiwell plates
000000-0496-315 (without fig.)
Mounting frame K-AM for multiwell plates
000000-1755-533 (without fig.)
**Mounting Frame K Thermo Plate
with Controller**
411860-9092-000 (without fig.)

(other mounting frames by choice)

Scanning Stage 130x100 PIEZO
432027-9001-000
with:
Stage controller XY PIEZO WSB CAN
432901-9904-000

**Scanning stage XY DC 110x90
w. attachment Z Piezo/Rot.En. Rev.4**
000000-0538-386
with:
Signal distribution box Rev.2 for Trigger-Board
432927-9041-000
Trigger board µCon HS (PCI xPress)
400100-9021-000
(This stage is only compatible with
following mounting frames:
451352-0000-000, 000000-1116-078,
451341-0000-000, 000000-0496-315,
000000-1755-533)

Scanning Stage 130x100 STEP
432029-9904-000
with:
Stage Controller XY STEP SMC 2009
432929-9011-000

Scanning Stage 130x85 mot P; CAN
432031-9902-000

**Mounting frame M for
Petri dishes, dia. 88 mm**
471759-0000-000
**Mounting frame M for
microtiter plates 96 pos.**
471746-0000-000
**Mounting frame M for
multitest dishes 133.5x88.5 mm**
471744-0000-000
Universal mounting frame M-X
471717-0000-000
Universal mounting frame M
471718-0000-000
Universal mounting frame M-Duo
000000-1116-077

(other mounting frames by choice)

**Object guide
130x85 mm left**
000000-1110-991

**Object guide
130x85 mm right**
000000-1005-833

**Specimen stage
250x230 mm**
432017-9901-000

**Gliding stage Z
with stage inserts
d=24 and d=48**
471722-0000-000

**Mechanical stage
130x85 R/L
for mounting frames K**
432016-9902-000
**Mechanical stage 130x85 R/L
with short coaxial drive,
for mounting frames K**
432047-9902-000

System Overview

Power supply external for HAL 100 and LED lamps
432610-9060-000
when required:
Extension cable 2 m for illuminators HAL 100/LED
457411-9051-000
Extension cable 6 m for illuminators HAL 100/LED
457411-9070-000

White-balance filter, d=32x1.5 mm
000000-1155-789
Contrast-enhancing blue filter, d=32x2 mm
000000-1220-224
Interference wide-band filter green, d=32x4
467803-0000-000
Conversion filter 5700-3200 K, d=32 mm
427809-9000-000
(further light filter d=32 mm by choise)

Polarizer D, rotatable with color glass carrier
000000-1121-813

Polarizer D with 2-position filter changer
000000-1005-864

Phosphorescence block filter for LED transmitted-light illumination
427918-9000-000

Interface for motorized condenser, incl. shutter
423921-0000-000
(required for LD condenser 0.55 mot.)
or: **Shutter high speed, external**
423627-9901-000
UNIBLITZ Shutter Controller VCM-D1 Rev.2
000000-1853-062
or:
Stand interface cable for external UNIBLITZ Shutter
432925-0000-000 (only for stands 5, 7)

HAL 100 illuminator with quartz collector
423000-9901-000
Bulb 12 V 100 W Halogen
380059-1660-000

Illuminator VIS-LED
423053-9030-000
LED lamp module
423053-9050-000

Illuminator microLED
423053-9071-000

additionally to illuminators VIS-LED and microLED:
Conversion filter 5700-3200 K, d=32 mm
427809-9000-000

Solid-State Light Source Colibri 7, Type RGB-UV
423052-9710-000
Solid-State Light Source Colibri 7, Type RYB-UV
423052-9720-000
Solid-State Light Source Colibri 7, Type R[G/Y]B-UV
423052-9730-000
Solid-State Light Source Colibri 7, Type R[G/Y]CBV-UV
423052-9741-000

For Colibri 7 recommended filter sets HE LED:
Filter Set 56 HE LED 489056-9110-000
Filter Set 90 HE LED 489090-9110-000
Filter Set 91 HE LED 489091-9110-000
Filter Set 92 HE LED 489092-9110-000
Filter Set 108 HE LED 489108-9110-000
Filter Set 109 HE LED 489109-9110-000

Control Panel for Colibri 7
423052-9750-000 (without fig.)
LED Trigger Box for Colibri 7
423052-9760-000 (without fig.)

High Speed Wavelength Switcher Lambda DG-4 Plus
(by choice)
Shutter high speed, external
423627-9901-000
UNIBLITZ Shutter Controller VCM-D1 Rev.2 000000-1853-062
or:
Stand interface cable for external UNIBLITZ Shutter
432925-0000-000 (for stands 5, 7)

HBO 100 illuminator, self-adjusting with lamp mount and collector
423011-9901-000
Burner Mercury - HBO 103 W/2
380301-9350-000

Power supply unit for HBO 100, 90…250 V, 50…60 Hz, 265 VA
432604-9902-000

Micromanipulation accessories:
CZ-MWO-202D Three axes Coarse/ Fine Manipulator, Hydr. /Hydr.
411831-0003-000
Micromanipulator set NZI-1
411831-0006-000
CZ-IM-9B Microinjector oil type
000000-1122-015
CZ-IM-9C Microinjector air type
000000-1122-016
HD-21 Double Pipette Holder
000000-1122-427
CZ-NZ-22 Narishige Adapter
411831-0002-000
Incubation accessories by choice

Carrier for transmitted-light illumination with LCD display and light manager
423922-0000-000 (for stand 5)
or required, if 423922-0000-000 has not been configured:
Holder with LCD display and light manager
432923-0000-000

Objectives autocorr
(by choice)
Installation Kit autocorr
420852-9020-000

Objectives M27
(by choice)

ACR rings
(for stand 7, by choice)

CAN Distributor for Motorized Objectives and Filter Wheels
420852-9000-000
(for up to 3 objectives autocorr and 1–2 filter wheels)

Shutter FL, internal
423625-0000-000

Filter wheel excitation 8-pos. mot. for filters d=25mm; CAN
452358-9000-000
(for stands 7/Z1)

Switching mirror for 2 illuminators
447230-9903-000
Switching mirror mot.; CAN
447229-0000-000
(for stands 5, 7)

Reflected-light illuminator FL
423606-9901-000
Reflected-light illuminator FL mot.
423607-9901-000 (for stands 5, 7)
Reflected-light illuminator FL UV
423605-9901-000

Illuminator HXP 120 V
423013-9010-000
Illumination adapter for light sources with light guide
423302-0000-000
optional:
Shutter remote control for HXP 120 V
000000-0544-644
Sheathing for Light Guide HXP for Stabilization
423302-9000-000
as a substitute :
Bulb mercury short-arc HXP 120
000000-0482-730
Light guide HXP with liquid fill, 2 m
000000-0482-760

Carrier for transmitted-light illumination with LCD display and light manager
423922-0000-000 (for stand 5)

Carrier for transmitted-light illumination
423920-0000-000
(for stands 3 and 7)

DIC prism I/0.35
000000-1005-821
DIC prism II/0.35
000000-1005-822
Slit-diaphragm 3.5 mm for PlasDIC
000000-1246-773

LD condenser 0.35 H, Ph0, Ph1, Ph2, DIC, DIC; 6 positions
424241-0000-000

Condenser module DIC I/0.55 with polarizer
426722-0000-000
Condenser module DIC II/0.55 with polarizer
426720-0000-000
Condenser module DIC III/0.55 with polarizer
426721-0000-000
Slit-diaphragm 3.5 mm for PlasDIC
000000-1246-773

LD condenser 0.55 H, Ph1, Ph2, Ph3, DIC, DIC; 6 positions
424242-0000-000
LD condenser 0.55 H, Ph1, Ph2, Ph3, DIC, DIC; 6 positions, mot.
424244-0000-000 (without fig.)
(for stands 5, 7)
Interface for motorized condenser, incl. shutter
423921-0000-000
(required for motorized condenser)

LD condenser 0.35 H Ph PlasDIC iHMC
424241-9010-000

Condenser module DIC II/1.4 with polarizer
426708-0000-000
Condenser module DIC III/1.4 with polarizer
426709-0000-000

Achromatic-aplanatic condenser 1.4 H D Ph DIC
424208-0000-000

Condenser mount for Axio Imager condensers 0.8/1.4
424245-0000-000

Condenser module DIC I/0.8 with polarizer
426705-0000-000
Condenser module DIC II/0.8 with polarizer
426706-0000-000

Condenser, LD achromatic
0.8 H DIC
424206-9901-000

① **Transmitted-light option Axio Observer 3, 5 and 7**

AI Sample Finder
428400-9000-000
with: **Condenser 0.55 mot f/SF**
428400-8201-000
Camera module f/SF
428400-8300-000
Deflecting mirror f/SF
428400-9100-000
Calibration plate f/SF
428400-9200-000

② Accessories:
Phase stop Ph1 0.35/0.4 for condenser
426717-9150-000
Phase stop Ph2 0.35/0.4 for condenser
426717-9160-000
Condenser module DIC I/0.35 with polarizer
426717-9280-000
Condenser module DIC II/0.35 with polarizer
426717-9290-000
Slit-diaphragm 3.5 mm PlasDIC for condenser (10x-40x)
426717-9110-000
Slit-diaphragm 5 mm PlasDIC for condenser (40x/63x)
426717-9120-000
iHMC module 1 0.35/0.4 for condenser (10x iHMC)
426717-9200-000
iHMC module 2 0.35/0.4 for condenser (20x iHMC)
426717-9210-000
iHMC module 3 0.35/0.4 for condenser (40x/63x iHMC)
426717-9220-000
(for iHMC required objectives, by choice)
Interference wide-band filter green, d=32x4
467803-0000-000
Neutral-density filter 0.05 for condenser
424228-9060-000

Microscope stand Axio Observer 3
(with 6-position nosepiece H DIC M27 cod.)
431004-9901-000

Microscope stand Axio Observer 5
(with 6-position nosepiece H DIC M27 cod.)
431006-9901-000

Microscope stand Axio Observer 7
431007-9904-000

DIC slider and PlasDIC slider
(by choice)

Analyzer fixed for contrast slider 10x29 mm
428108-9000-000

Adapter for Third Party components
423636-0000-000 (without fig.)

4-position CAN hub
432927-9050-000 (without fig.)

3-position contrast slider 10x29 mm for PlasDIC module and analyzer
426980-9100-000
(for stands 3 and 5)
PlasDIC module LD A-Plan 10x-63x for contrast slider 10x29 mm
426980-9080-000 (for stands 3, 5)
PlasDIC module LD PN 20x, 40x for contrast slider 10x29 mm
426980-9090-000 (without fig.)
(for stands 3, 5)

3-position filter slider, d=25 mm
000000-1062-259
(Light filters d=25 mm by choice)

FL attenuator, discrete
423647-0000-000
FL attenuator, discrete mot.
423648-0000-000
(for stands 5, 7)

Iris stop slider for incident-light equipment
000000-1062-360
Iris stop slider mot. for incident-light equipment
423646-0000-000
(for stands 5, 7)

Slider with variable rectangular diaphragm
000000-1140-737

TFT-Display
(of stand 7)

1-position tube lens mount, fixed
431010-0000-000
(included in stand 3)

3-position optovar turret cod.
431012-0000-000
(for stand 5)

3-position optovar turret mot.
431013-0000-000
(for stand 7)

Docking station for TFT-Display
432907-9901-000
(for stand 7)

Dust cover
(L 600 x B 420 x H 620 mm)
459330-0000-000

Optovar 1.25x
000000-1145-667
Optovar 1.6x
000000-1268-705
Optovar 2.5x
000000-1005-856
(max. choice of 2 per stand)

IR blocking filter, mounted (BP 400-750 nm), d=32 mm
424533-9070-000
Analyzer slider, fixed
000000-1005-862
Analyzer slider +/–30° for DIC (Sénarmont with Lambda/4 plate)
000000-1005-863
Analyzer slider D/A, 360° rotatable
428103-0000-000
Analyzer slider D/A with lambda-plate, each rotatable +/– 10°
453663-9901-000

Slider system Apotome 3 for Axio Observer
423667-9010-000

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Technical Specifications

For more detailed information on dimensions please contact us at microscopy@zeiss.com

	Option	3	5	7
Stand	manual	+	+	−
	motorized	−	o*	+
Encoding	readable by PC	+	+	+
Display	LCD display	−	o**	−
	TFT display	−	−	+
	Docking station	−	−	o
Interfaces	CAN	+	+	+
	RS 232	−	+	+
	USB	+	+	+
	TCP/IP	−	+	+
	Socket for external UNIBLITZ shutter	−	+	+
	Trigger socket (In/Out) for shutter	−	+	+

+ = included in stand   o = optionally available   o* = optional: reflector turret mot., reflected-light illumination mot., LD condenser 0.55 mot.

o** = requirement (either Carrier transmitted-light illumination, LCD display, Shutter (423926-9010-00) or Holder with LCD display and Light Manager (432923-0000-000))   +*** = "simple" Light manager   − = not available

Technical Specifications

	Option	3	5	7
4-position CAN hub		–	o	o
Light manager		+***	+	+
Contrast manager		–	–	+
Circular operation key unit	right	–	+	+
	left	–	–	+
Z-focus drive	manual	+	+	–
	motorized, stepper motor drive (z-step size 10 nm)	–	–	+
Adjustable limit stop for z-focus	manual	–	+	–
Automatic Component Recognition (ACR)	Nosepiece ACR	–	–	o
	Reflector turret ACR	–	o	o
Power supply	internal	+	+	–
	external	–	–	+
Z-drive operation (flat control knob)	right	o	–	o
	left	o	+	o
Z-drive, 13 mm extended travel range	manual	o	o	–
	motorized	–	–	o
Nosepiece	6-pos. H DIC cod.	+	+	–
	6-pos. H DIC mot.	–	–	o
	6-pos. H DIC mot. ACR	–	–	o
Definite Focus 3	incl. nosepiece 6-pos. H DIC mot. ACR	–	–	o
Objectives autocorr		–	–	o
Contrast methods transmitted light	PlasDIC	o	o	o
	PlasDIC with contrast slider	o	o	–
Tube lens mount, fixed/Optovar turret	1-pos. tube lens mount, fixed	+	o	o
	3-pos. optovar turret, encoded	–	o	–
	3-pos. optovar turret, motorized	–	–	o

+ = included in stand   o = optionally available   o* = optional: reflector turret mot., reflected-light illumination mot., LD condenser 0.55 mot.

o** = requirement (either Carrier transmitted-light illumination, LCD display, Shutter (423926-9010-00) or Holder with LCD display and Light Manager (432923-0000-000))   +*** = "simple" Light manager   – = not available

Technical Specifications

	Option	3	5	7
Sideport (type)	2 or 3-pos. man. (exit to the left only)	+	−	−
	2 or 3-pos. man. L/R	−	+	−
	3-pos. mot. L/R	−	−	+
Sideport (accessory)	60N L, 2 switching positions (100% vis : 0% L / 20% vis : 80% L)	o	o	−
	60N L 100, 2 switching positions (100% vis : 0% L / 0% vis : 100% L)	o	o	−
	60N L, 3 switching positions (100% vis : 0% L / 0% vis : 100% L / 50% vis : 50% L)	o	o	o
	60N R, 3 switching positions (100% vis : 0% R / 0% vis : 100% R / 50% vis : 50% R)	−	o	o
	60N L/R 3 switching positions (100% vis : 0% LR / 0% vis : 100% L / 20% vis : 80% R)	−	o	o
	60N R/L 100, 3 switching positions (100% vis : 0% LR / 0% vis : 100% L / 0% vis : 100% R)	−	o	o
	60N L 80/R 100, 3 switching positions (100% vis : 0% LR / 20% vis : 80% L / 0% vis : 100% R)	−	o	o
Path deflection to the tube (VIS only)		+	o	o
Beam path switching (for VIS / frontport / baseport)	manual	−	o	−
	motorized	−	−	o
Baseport / Frontport		−	o	o
Scanning stages	Scanning Stage 130×85 mot; CAN	o	o	o
	Scanning Stage 130×100 STEP	o	o	o
	Scanning Stage 130×100 PIEZO	o	o	o
	Scanning Stage XY DC 110×90 with attachment Z Piezo/Rot.En.	o	o	o
Stage attachment Z PIEZO		o	o	o
Carrier transmitted-light illumination	without LCD display	o	−	o
	with LCD display	−	o**	−
Illuminator transmitted-light	microLED 2, VIS-LED, HAL 100	o	o	o
Condensers	LD 0.35 / LD 0.55, manual	o	o	o
	LD 0.55, motorized	−	o	o
	LD condenser 0.55, motorized; AI Sample Finder	−	−	o
Shutter for transmitted-light	internal	−	o	o
	external, High Speed (with int. controller)	−	o	o

+ = included in stand   o = optionally available   o* = optional: reflector turret mot., reflected-light illumination mot., LD condenser 0.55 mot.

o** = requirement (either Carrier transmitted-light illumination, LCD display, Shutter (423926-9010-00) or Holder with LCD display and Light Manager (432923-0000-000))   +*** = "simple" Light manager   − = not available

Technical Specifications

	Option	3	5	7
Reflected light illumination	manual	o	o	o
	motorized	–	o	o
Slider for reflected light illumination	manual	o	o	o
	motorized	–	o	o
Shutter for reflected light	Shutter FL, internal	o	o	o
	High Speed, external (with int. controller)	–	o	o
Illumination system	HBO 100, HXP 120 V, Colibri 5 and 7, Xylis LED (white light LED)	o	o	o
Reflector turret	6-pos. manual	o	o	–
	6-pos. encoded	–	o	o
	6-pos. motorized	–	o	o
	6-pos. motorized ACR	–	o	o
Fast filter wheels	Dual filter wheel mot. for beam splitting and emission; CAN	–	–	o
	Filter wheel excitation 8-pos. mot. for filters d = 25 mm; CAN	–	–	o
Switching mirror mot.; CAN	motorized	–	o	o
Laser safety upgradeable		–	–	o
Apotome 3		–	o	o

o = optionally available   – = not available

ZEISS Service – Your Partner at All Times

Your microscope system from ZEISS is one of your most important tools. For over 170 years, the ZEISS brand and our experience have stood for reliable equipment with a long life in the field of microscopy. You can count on superior service and support - before and after installation. Our skilled ZEISS service team makes sure that your microscope is always ready for use.

Procurement

- Lab Planning & Construction Site Management
- Site Inspection & Environmental Analysis
- GMP-Qualification IQ/OQ
- Installation & Handover
- IT Integration Support
- Startup Training

Operation

- Predictive Service Remote Monitoring
- Inspection & Preventive Maintenance
- Software Maintenance Agreements
- Operation & Application Training
- Expert Phone & Remote Support
- Protect Service Agreements
- Metrological Calibration
- Instrument Relocation
- Consumables
- Repairs

New Investment

- Decommissioning
- Trade In

Retrofit

- Customized Engineering
- Upgrades & Modernization
- Customized Workflows via APEER

Please note: Availability of services depends on product line and location

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