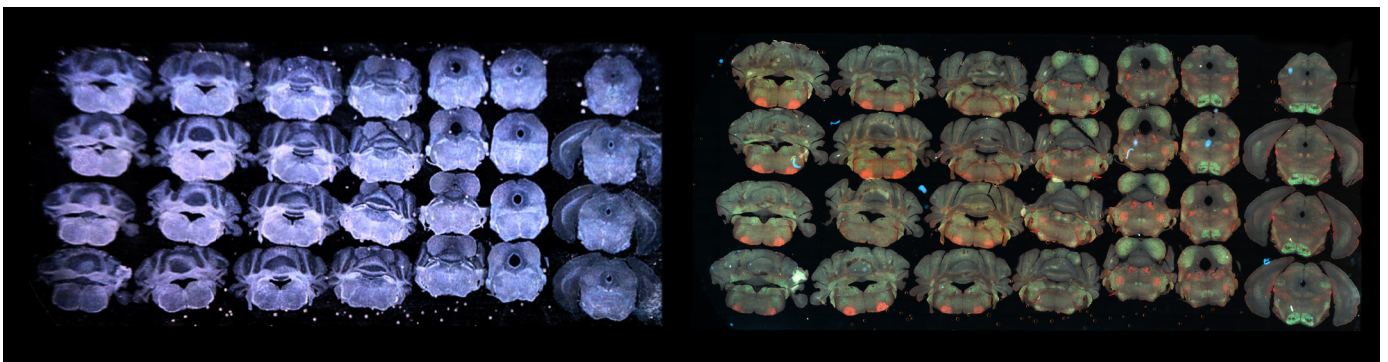


# Automated Acquisition and Advanced Data Analyses

## ZEISS Axio Observer *scan* and ZEISS Axio Imager *scan* for High Throughput Screening & Automated Workflows



Darkfield Composite Contrast image (left) and fluorescence image (right) of brainstem 80  $\mu\text{m}$ -thick sections. Labeling of excitatory neurons with GFP (nuclear), and signal amplification with anti-GFP and Alexa 488-conjugated secondary antibodies, counterstained with anti-ChAT (motor neurons) and Alexa 647-coupled secondary antibodies. Courtesy of Silvia Arber and Staci Thornton, FMI.

If you use manual imaging and analyses workflows, your research may be limited by:

- Inability to collect the total amount of desired data
- Incomplete analyses due to low sample seize
- Biased analyses inherent in manual selection and interpretation of data
- Unsuccessful screen attempts due to inability to locate extremely rare events
- Poor time management of technicians and researchers manually collecting and analyzing large amounts of data

Equip yourself with automated imaging acquisition tools and AI-powered software analyses to break through previous experimental barriers. ZEISS Axio Observer *scan* and Axio Imager *scan* are designed to increase

the efficiency of your large-scale, high-throughput data collection workflows. Set up automatic data collection using AI Sample Finder to independently find and focus on your sample at 5–10 $\times$  faster speeds compared to a manual system start. Set up your acquisition parameters to automatically identify rare events in overview images. This smart data acquisition ensures data generation and evaluation to only relevant data.

Harness the power of advanced software analyses to uncover new insights in your experiments. Perform your own 2D image analyses with pre-trained AI models or enable machine-learning algorithms to segment images. All ZEISS software is designed to support researchers with no programming background, enabling you to take the step into AI-powered analyses.

The combination of selected hard- and software in the Axio Observer *scan* and Axio Imager *scan* bundles create a streamlined process from acquisition through evaluation for your research needs, including:

- Multiplexing applications requiring repeated imaging of large tissue sections with several dyes
- High-throughput imaging of multi-well plates or slides for drug screenings
- Large-scale genetic screens

Increase your amount of collected data and advance your analyses for unbiased, statistically significant evaluations of your experimental results.

# ZEISS Axio Observer *scan* and ZEISS Axio Imager *scan*

## The Bundle Components

### Microscope

- Axio Observer 7 (inverted)
- Axio Imager 2 (upright)
- Scanning stage 130 × 100
- Mot. Condenser NA 0.55<sup>1</sup> / NA 0.9<sup>2</sup>
- AI Sample Finder<sup>1</sup>
- Definite Focus 3<sup>1</sup>
- Apotome 3<sup>2</sup>
- Autoimmersion Module<sup>1</sup>

### Light source / camera

- Colibri 7
- Filter sets 38, 43, 50, 64, 70<sup>2</sup>, 96, 112<sup>1</sup>
- AxioCam 820 mono<sup>1</sup> / 305 color<sup>2</sup>

### Objectives

- EC Plan-Neofluar 5×/0.16
- Plan-Apochromat 10×/0.45, 20×/0.8
- LD LCI PApo 40×/1.2 Imm Corr DIC<sup>1</sup>
- LD LCI PApo 40×/0.95 Corr<sup>2</sup>

### Workstation

- Z6 Workstation with 128 GB RAM and nVidia Quadro RTX4000 16GB

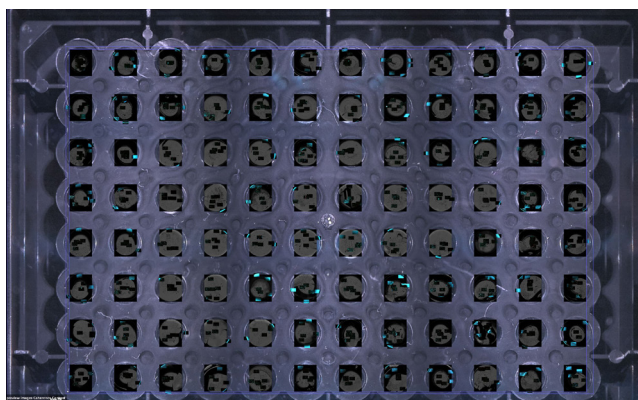


Depending on your application needs, you can either choose an inverted configuration based on ZEISS Axio Observer 7 (left) or an upright configuration based on ZEISS Axio Imager 2.

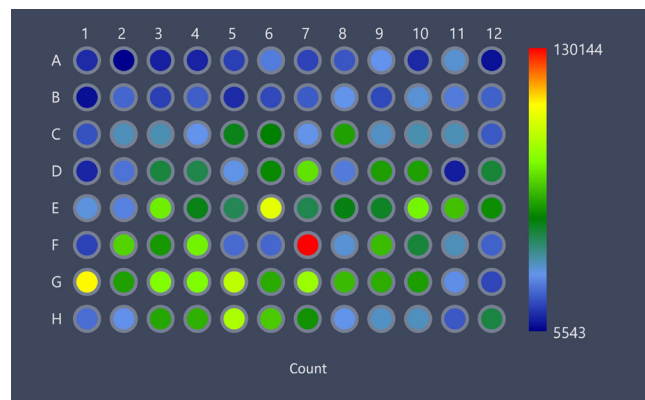
### ZEN software packages

- ZEN Toolkit Motorized Acquisition: Acquire images and control motorized components in multi-dimensional experiments.
- ZEN Toolkit Smart Acquisition: Create flexible and intelligent image acquisitions workflows with the Experiment Designer, Guided Acquisition and Experiment Feedback tools.
- ZEN Toolkit 2D: Create flexible automatic measurement programs for the analysis of your 2D images.
- ZEN Toolkit AI: Make use of powerful AI tools. With this package, you can train AI models for various applications.

<sup>1</sup>Axio Observer 7, <sup>2</sup>Axio Imager 2



Overview image of a 96-well plate showing the exact position of the obtained transmitted light and fluorescence images.



Heatmap of the cell count evaluation of a 96-well plate allows you to quickly identify wells containing high and low number of cells.



microscopy@zeiss.com  
[www.zeiss.com/widefield-bundles](http://www.zeiss.com/widefield-bundles)



Seeing beyond