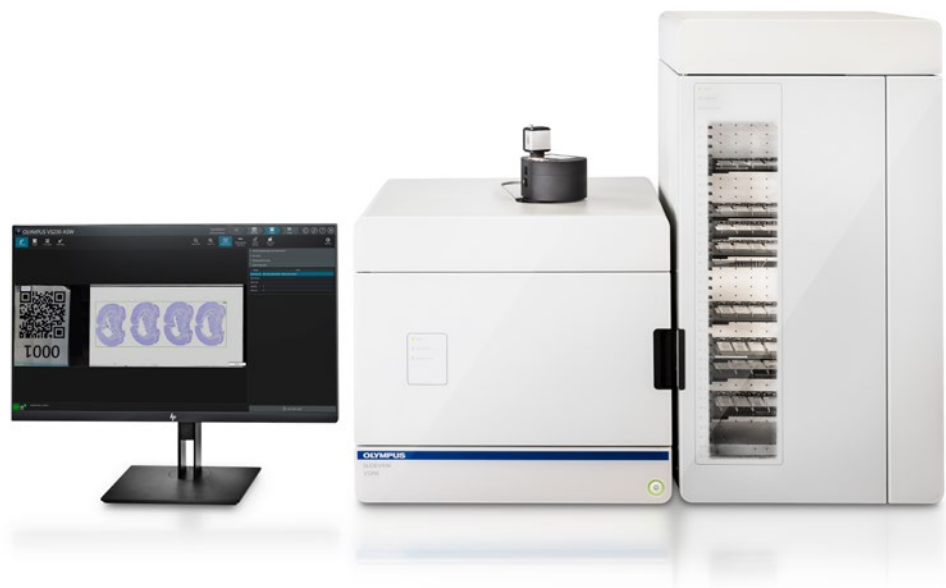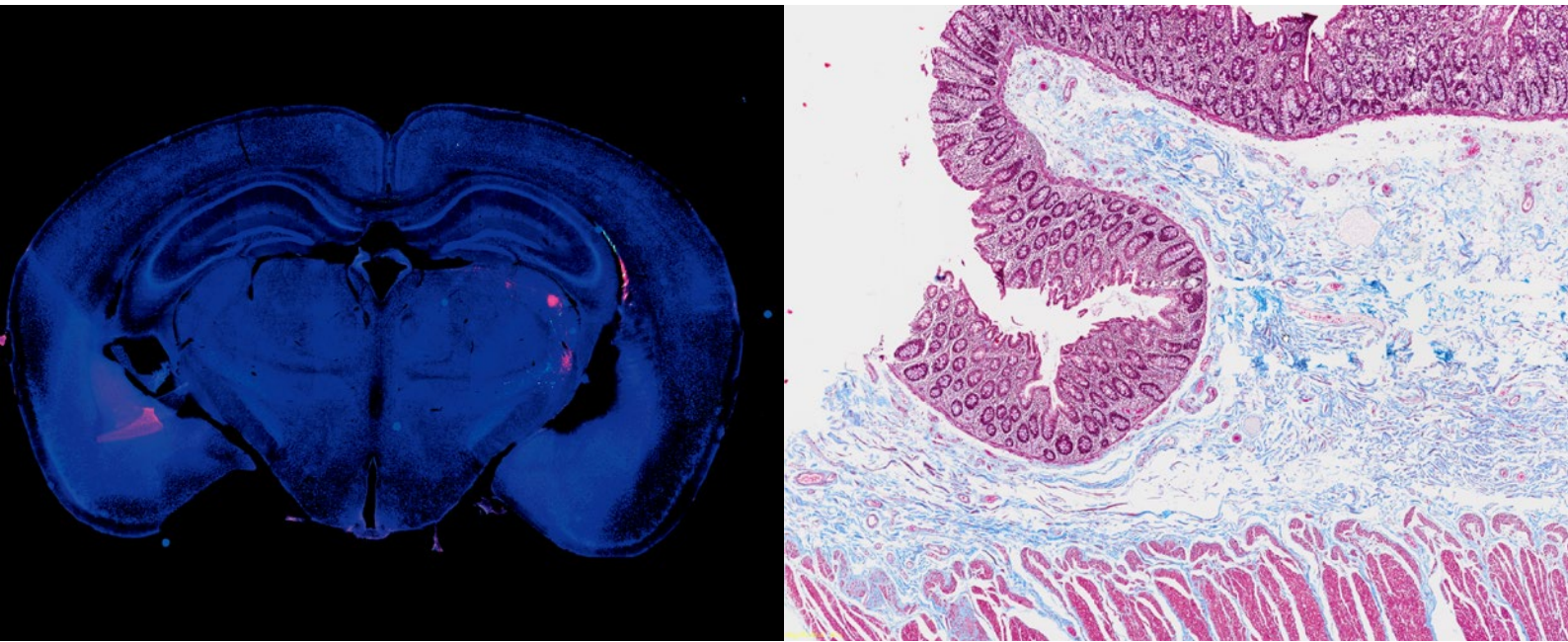# The Power to See More

# Reliable Data for Many Applications

Digitizing slide data makes it easy to analyze, share, and archive your results. The SLIDEVIEW VS200 research slide scanner enables you to capture high-resolution images of your slides for quantitative analysis, so you can make the most of the information your slides have to offer. The optical system is optimized for scanning slides, enabling you to digitize slides for brain, cancer, and stem cell research, as well as drug discovery.

Cortico-thalamic projection pathways labeled with AAV-GFP and AAV-tdTomato.
Image data courtesy of Hong Wei Dong, MD, Ph.D., Professor of Neurology, Keck School of Medicine of University of Southern California.

Brain Research

Brain and neuroscience researchers need to observe in detail from single cells to the entire tissue, brain, surface, and deep areas. The VS200 slide scanner can combine localized high-resolution images from an entire brain into one digital file instead of multiple snapshots. In addition, since a large slide glass holder is available, bigger samples that previously had to be divided into multiple slides, such as monkey brains, can now be digitized in a single scan.
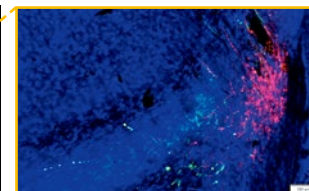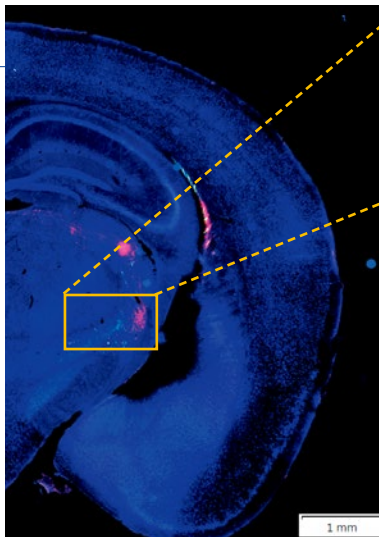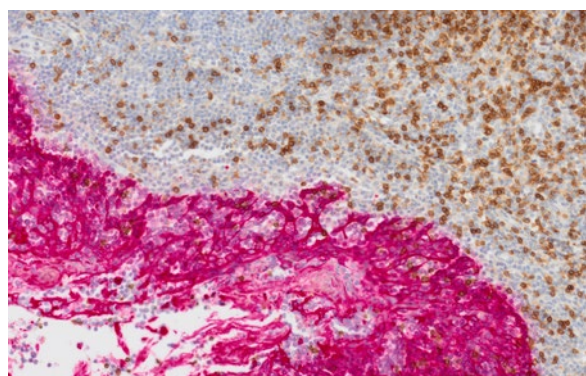
Cancer and Stem Cell Research

In cancer and stem cell research, it is critical to be able to evaluate a tissue's composition and morphology along with the morphology of individual cells and the ability to resolve two objects close together or on top of each other (localization). The system's optics offer broad chromatic aberration correction and improved flatness, making these target molecules easier to resolve and significantly reducing distortion.

Tonsil CD3 (rm), ImmPRESS Reagent (HRP) Anti-Mouse IgG Immpact DAB (brown), AE1/AE3(m) ImmPRESS (AP) (HRP) Anti-Rabbit IgG Immpact Vector Red (red). Counterstained with Hematoxylin QS (blue). Image data courtesy of Vector Labs.

Drug Discovery

In the field of drug discovery research, it is possible to accelerate the understanding of target molecule interactions by detecting the localization of more molecules at one time. Image quality is crucial when acquiring quantitative data from whole slide images, and this is where the VS200 slide scanner excels. By comprehensively scanning the localization information of multiple target molecules in a wide range at one time, the interaction between molecules can be evaluated efficiently.
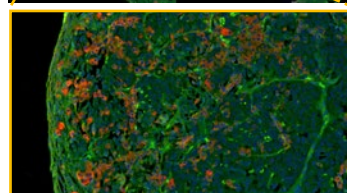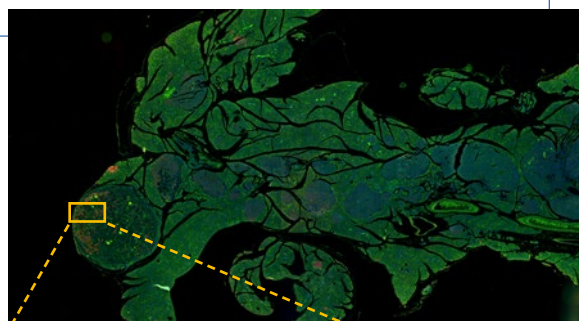

Pancreas stained with Dapi, GFP and RFP.
Image data courtesy of NJ Rutgers Cancer Center—Wenjin Chen.

Outstanding Image Quality for Quantification

Better Resolution and Flatness

To produce high-quality virtual slide images, the VS200 system uses X Line high-performance objectives, which offer simultaneously improved numerical aperture, chromatic aberration correction, and flatness. The result is flatter images with a wider field of view and no intensity fall off near the periphery. To further enhance the image quality, the system's light path is optimized to work with X Line objectives, providing more homogenous illumination. These enhancements allow for excellent image quality so that quantification techniques using measuring or colocalization are as accurate as possible.

Fly-eye lens

**True color LED**

X Line objectives

X L I N E
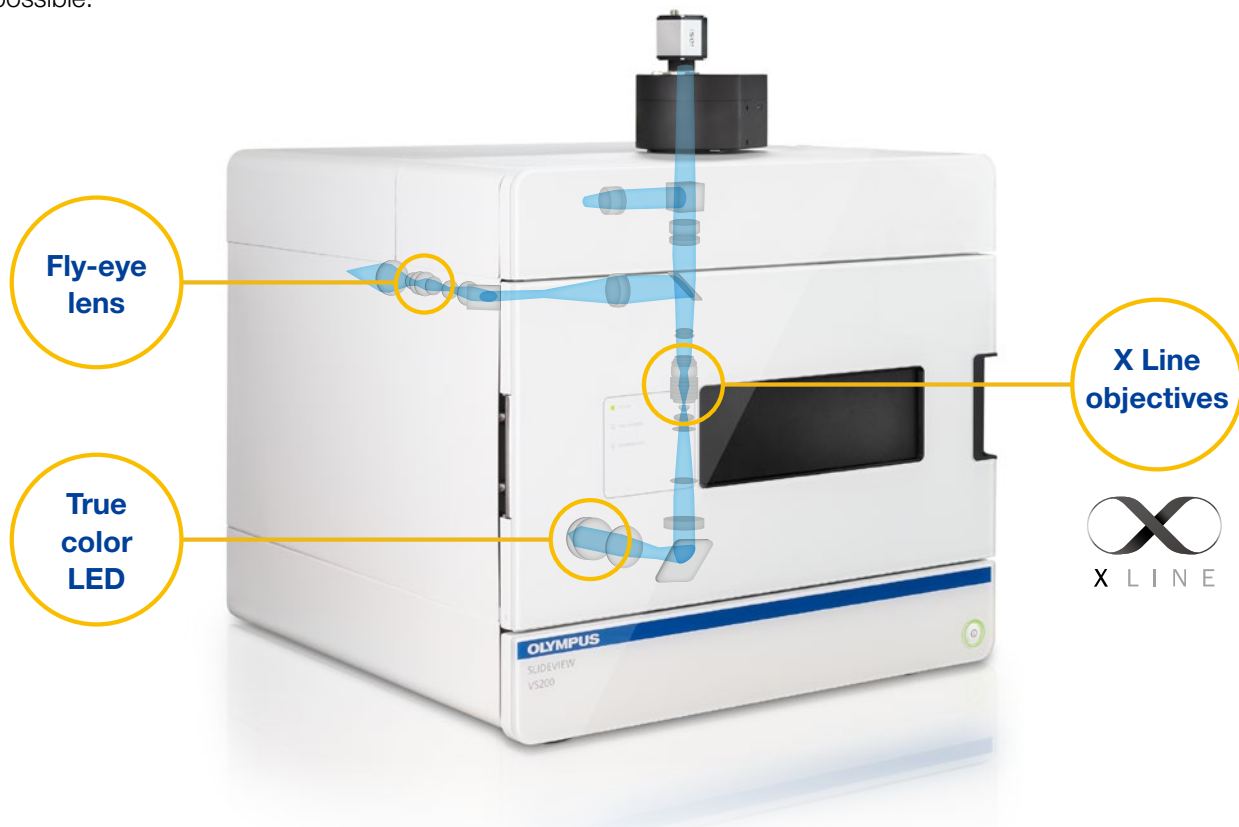
Bright LED with Accurate Color Reproduction

The system's true color LED for transmitted illumination has the same spectral characteristics and power as a halogen lamp, so purple, cyan, and pink stains are correctly represented, imaged, and rendered.
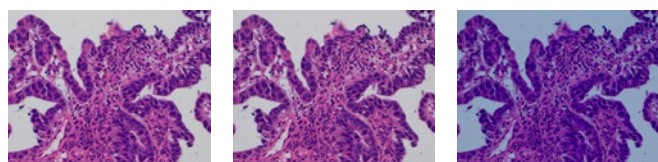
— VS200 LED

— Halogen Lamp + Day Light Filter

— Commercially Available White LED

Spectral Characteristics*

Wavelength [nm]

380 430 480 530 580 630 680 730 780
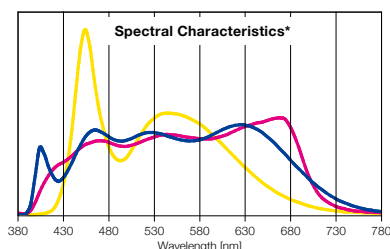
* This graph shows the spectral characteristics of each light source normalized with the luminosity curve. It does not compare the strength of light for each light source.

Uniform Fluorescence Illumination

The fluorescence illuminator with its fly-eye lens uniformly distributes light across the entire field of view for bright, even images.
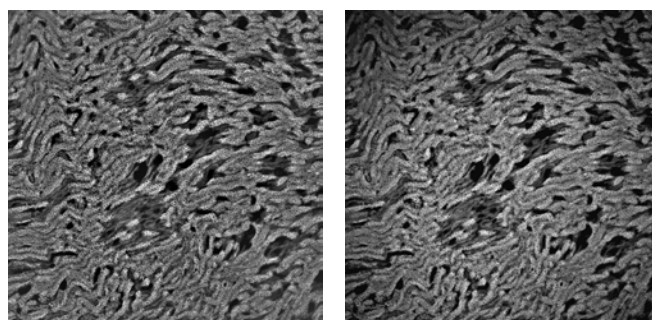
With Fly-Eye Lens System

Without Fly-Eye Lens System

Flexible for Many Applications

Five Observation Methods in One System

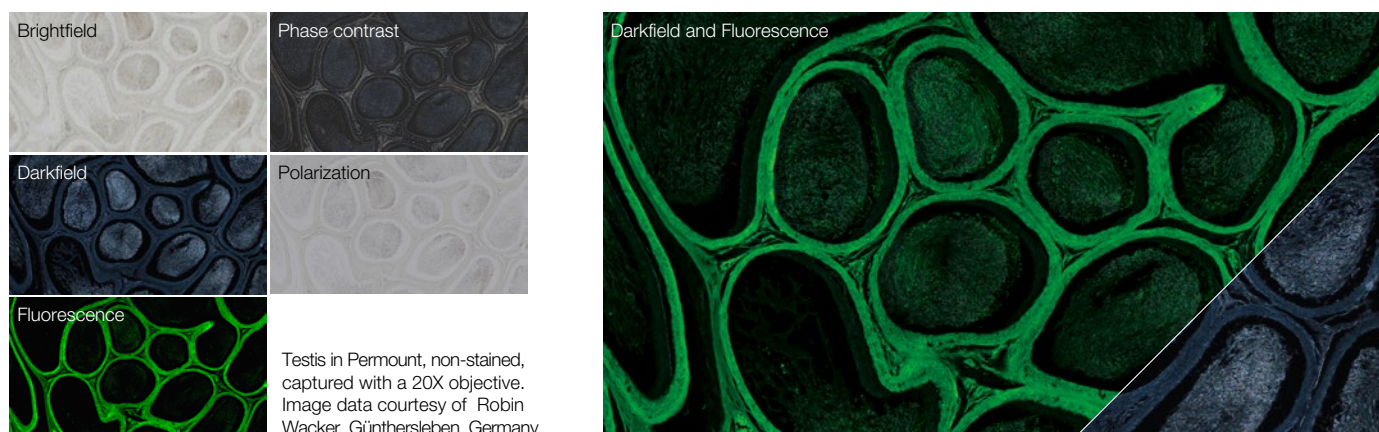The VS200 slide scanner can be used for brightfield, fluorescence, darkfield, phase contrast, and simple polarization. This flexibility allows you to combine different observation methods to view structures that are only visible under certain conditions. For example, darkfield helps to get a proper overview image of a fluorescence sample unstained in the visible spectrum and provides the best contrast scaling between the overview signal and focused fluorescence signal.

Brightfield

Phase contrast

Darkfield

Polarization

Fluorescence

Testis in Permount, non-stained, captured with a 20X objective. Image data courtesy of Robin Wacker, Günthersleben, Germany.

Darkfield and Fluorescence

Supports Single Glass Slides Up to Glass Plates

The simple-to-use slide tray supports 26 × 76 mm (1 × 3 in.), 52 × 76 mm (2 × 3 in.), 76 × 102 mm (3 × 4 in.), and 102 × 127 mm (4 × 5 in.) slides. The system enables you to manage different slide sizes at the same time.
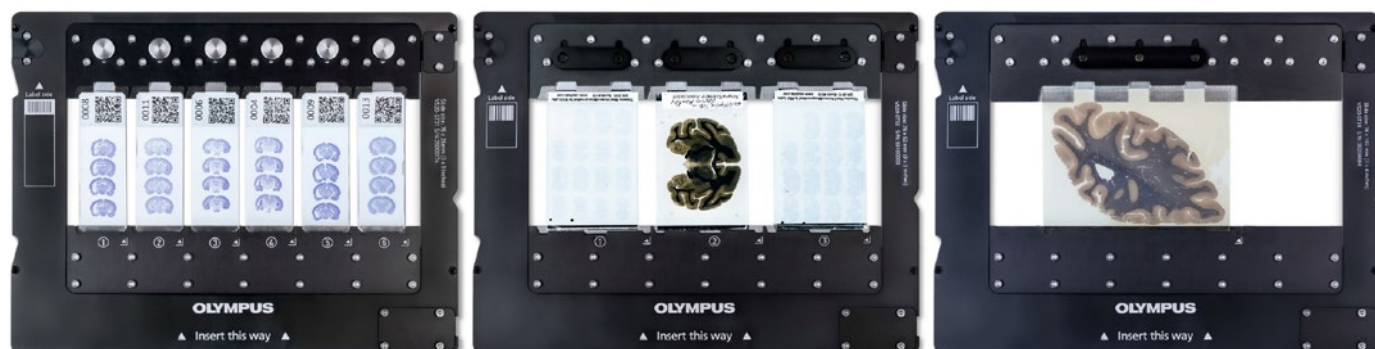
## Flexibility to Use Dry, Silicone Oil, or Oil Objectives

Unlike many slide scanners that do not offer high-magnification capabilities, the VS200 system's automatic oil dispenser enables you to use high-magnification oil or silicone oil immersion objectives for batch scanning without having to frequently stop to oil the lens.

Achieve More in Less Time

High Throughput

The loader holds up to 210 26 × 76 mm (1 × 3 in.) slides with 35 slide trays. The robotics in the loader moves the trays and not the individual slides, helping your slides remain safe and intact. The type of slide trays, the number of slides, and the size of the slides are immediately detected, while the integrated barcode reader automatically captures and records the slide information.
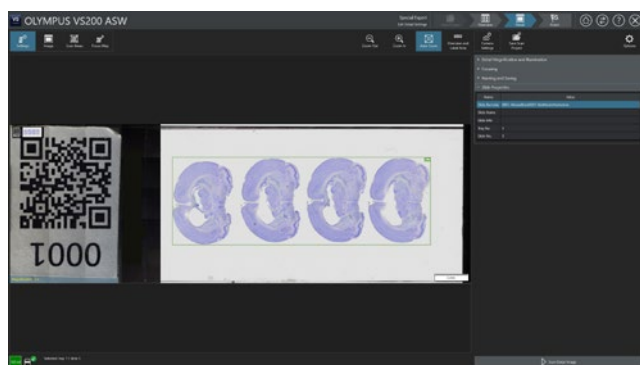

Higher Productivity

You can work on scan parameter settings for some slides while other slides are being acquired. The convenient software gives you the flexibility to control all of your scan's settings.

- **Identical Settings** mode automatically assigns scan settings to all the slides
- **Individual Settings** mode enables you to change specific settings for each slide or all the slides in a single tray
- **Priority Scan** function enables you to interrupt a continuous operation to scan a slide and then resume what you were scanning

The VS200 slide scanner also has hot-swap functionality, so additional trays can be added to the loader before all the trays of a given project have been scanned.
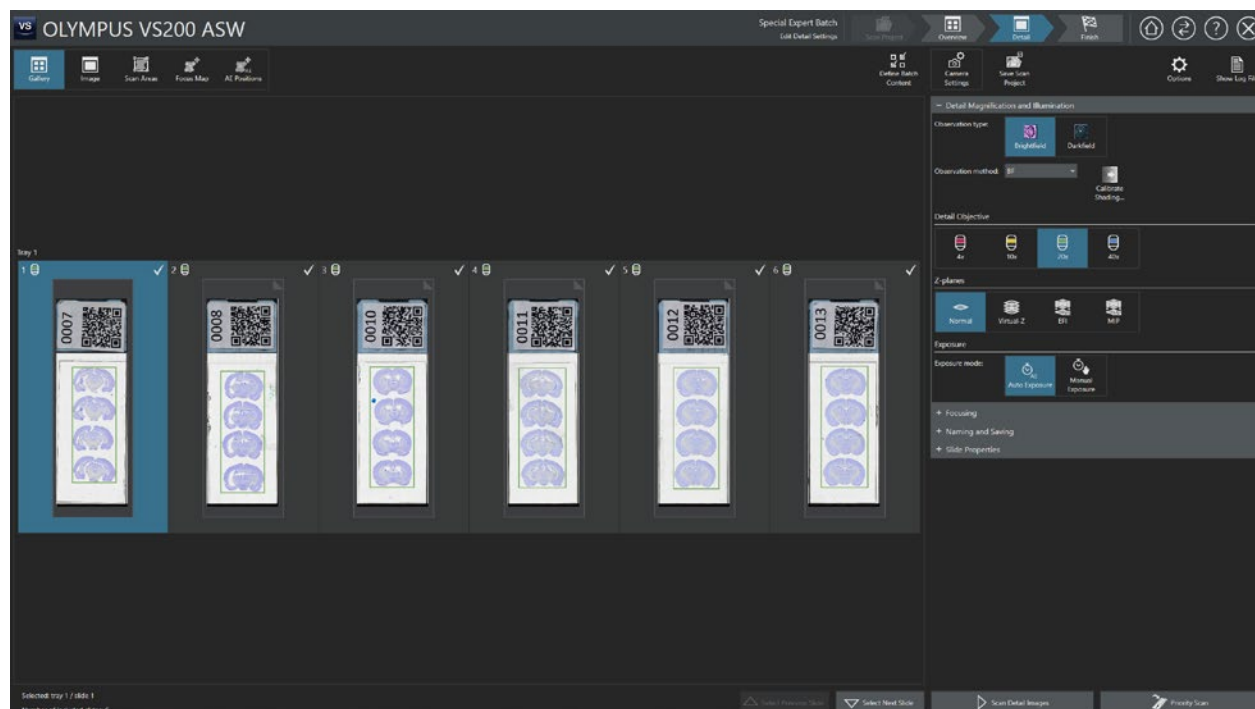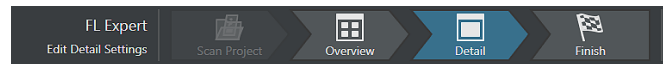
Simplified, Powerful Workflow

Simple User Interface for Reproducible Results

Depending on the level of control required, you can switch from expert mode, which enables you to customize the system's settings, to quick mode where the software optimizes the settings for you. Using quick mode, you can complete scanning a slide in as few as two clicks.
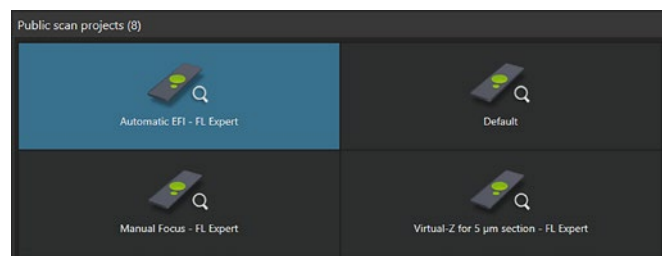

Quick mode

Expert mode

Save and Recall Acquisition Settings to Speed Up Your Work

For repetitive workflows, you can save, recall, and share your predefined acquisition setting projects, speeding up your work and helping standardize operations. These projects can also be shared between users for even greater flexibility.


The Power of TruAI Deep-Learning Technology

TruAI technology uses deep learning to simplify workflows and rapidly deliver more accurate results. For example, conventional thresholding methods have difficulty identifying morphologic features on a sample and can miss critical targets. With a trained neural network, such as on pancreas samples, TruAI technology can accurately segment pancreatic islets and differentiate them from erythrocytes, enabling the number and size of the islets to be counted and measured automatically.
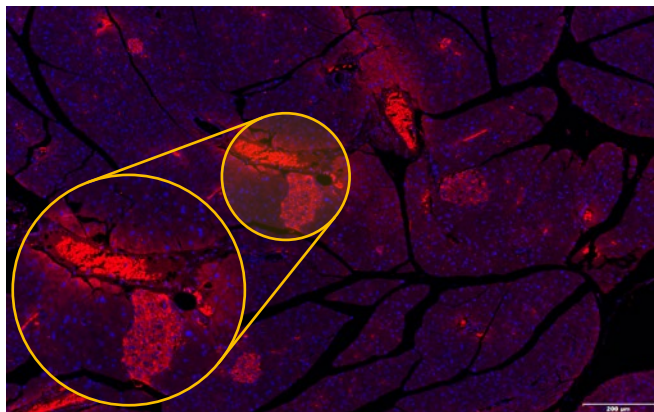
Cy3 fluorescence marked pancreatic islets. Erythrocytes as well as pancreatic islets are stained (red).
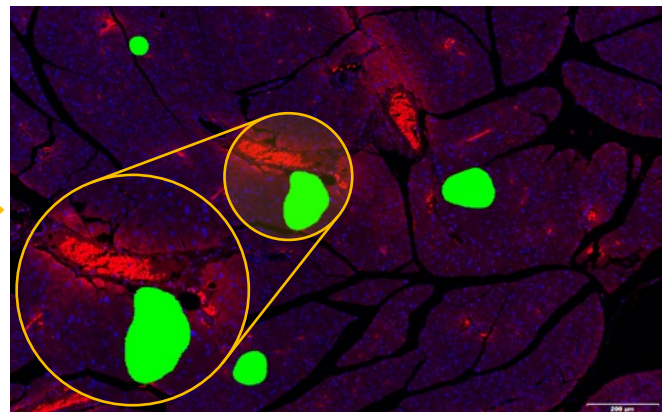
Probability map detection based on TruAI technology. Only pancreatic islets are accurately detected (green).
Image data courtesy of Univ.-Prof. Dr. rer. nat. Simone E. Baltrusch, Institute for Medical Biochemistry and Molecular Biology, Rostock University Medical Center, University of Rostock.

Multiplex Scan Mode

When tissue samples are limited, it is critical to gather the most data possible from each tissue section. Multiplexing immunofluorescence allows for greater understanding of co-expression and the spatial composition of multiple targets within a single sample. The multiplexing scan mode helps optimize the utility of these select samples by aligning multiple fluorescent channels with a reference channel.

Lung tissue imaged on a VS200 at 20X stained with an Ultivue PD-L1 kit multiplex kit; Dapi: Nuclear Counterstain, FITC: CD8, TRITC: CD68, Cy5: PD-L1, Cy7: panCK. Image data courtesy of Ultivue Inc.
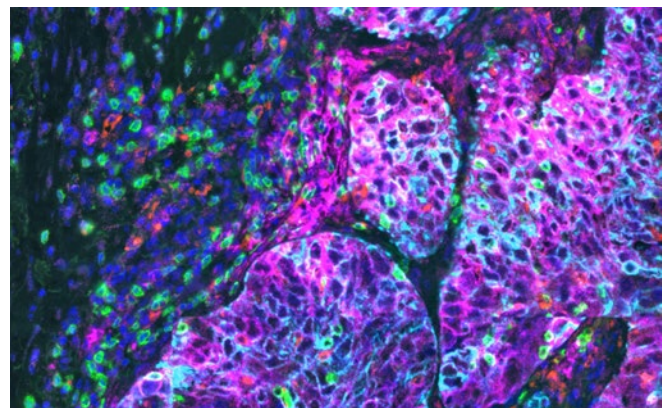
Convenient Data Management

Comprehensive Image and Data Management

The optional Net Image Server NIS SQL database allows you to conveniently manage any image. The database software enables users to store images and send image data via the web so that virtual slide images can easily be shared with a broad audience. Access to the image data can be controlled with individual access rights. Virtual slides are easily found by using keywords in the folder tree. Simply double-clicking on the corresponding thumbnail image opens the virtual slide in a new window.

Data management via the image server

Remote Access with Free Virtual Slide Viewers

Olympus' free OlyVIA software enables acess to virtual slides through local or network storage. Images that have been saved to the Net Image Server can be viewed over an internet connection. OlyVIA supports image annotation and allows sharing of information by users with NIS SQL.

Colon stained with Masson's Trichrome.
Image data courtesy of NJ Rutgers Cancer Center—Wenjin Chen.
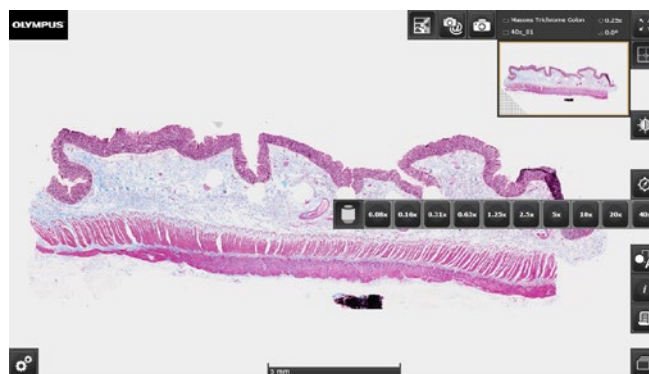
Dimensions

(unit: mm)

Base Unit with Standard Camera

Loader System

Specifications

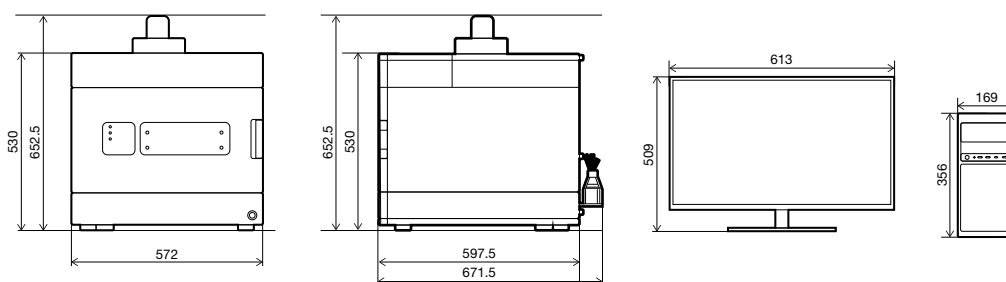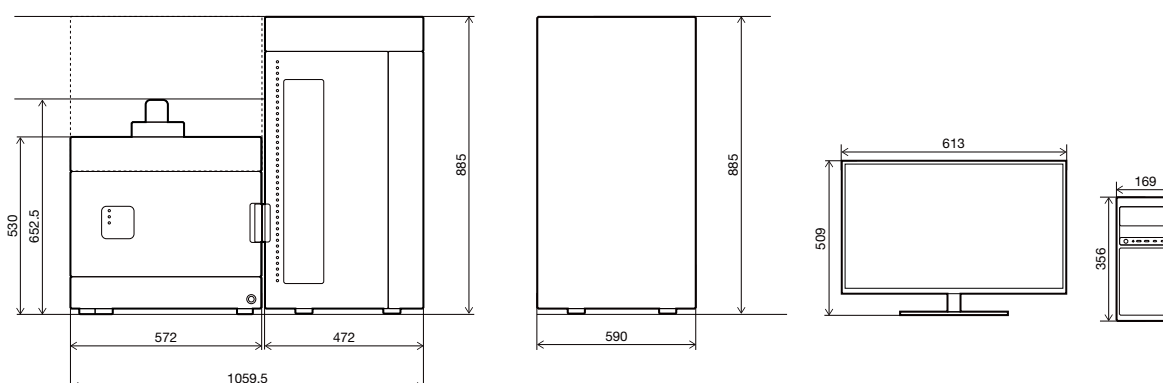|		VS200 Single Tray	VS200 Multiple Tray Loader
Intended Specimen	Observable Specimen	Glass slide with cover glass	
	Size of Glass Slide	Standard slide tray (width × height × thickness; 6 slides): 25 mm–26.5 mm (0.98 in. –1 in.); 75 mm–76.5 mm (2.95 in. –3 in.); 0.9 mm–1.2 mm (0.04 in. –0.05 in.) Optional slide tray 1 (width × height × thickness; 3 slides): 51 mm–53 mm (2 in. –2.09 in.); 75 mm–76.5 mm (2.95 in. –3 in.); 0.9 mm–1.2 mm (0.04 in. –0.05 in.) Optional slide tray 2 (width × height × thickness; 1 slide): 100 mm–102 mm (3.94 in. –4.02 in.); 75 mm–76.5 mm (2.95 in. –3 in.); 0.9 mm–1.2 mm (0.04 in. –0.05 in.) Optional slide tray 3 (width × height × thickness; 1 slide): 126 mm–128 mm (4.96 in. –5.04 in.); 100 mm–102 mm (3.9 in. –4 in.); 1.1 mm–1.4 mm (0.04 in. –0.05 in.)	
	Thickness of Cover Glass	0.12 mm–0.17 mm (0.005 in.–0.007 in.)	
	Observation Methods	Brightfield, darkfield, phase contrast (optional[*1]), simple polarization (optional[*2]), fluorescence (optional)	
Optical Frame	Illuminator	Built-in Köhler illumination for transmitted light, high-intensity and high color rendering LED (up to 50,000 hours)	
	Objectives	Compatible objectives: 2X, 4X, 10X, 20X, 40X, 60X, and 100X; 6-position motorized revolving nosepiece (incl. select oil immersion, silicone immersion, and phase contrast objectives) Optional automatic oil dispenser	
	Stage	Motorized XY stage with automatic control	
	Focusing	Motorized focusing with automatic control	
	Color Camera	Integrated 2/3-inch CMOS, 3.45 µm × 3.45 µm pixel size, high sensitivity, high resolution	
Scanner	Capacity	1 slide tray, 6 slides maximum Upgradable to the multiple tray loader model	Up to 35 slide trays, 210 slides maximum
	Pixel Resolution (Color Camera)	UPLXAPO20X (NA 0.8): 0.274 µm/pixel Options: UPLXAPO10X (NA 0.4): 0.548 µm/pixel UPLXAPO40X (NA 0.95): 0.137 µm/pixel UPLXAPO60XO (NA 1.42): 0.091 µm/pixel UPLXAPO100XO (NA 1.45): 0.055 µm/pixel	
	Scan Time	Approx. 80 sec (20X objective, scan area 15 mm × 15 mm (0.6 in. × 0.6 in.) brightfield)	
	Software	Automatic sample detection, automatic barcode reading, automatic focus mapping, automatic scanning, automatic stitching, pause and resume scanning, Z stack imaging extended focus imaging (EFI), multiple image formats (vsi, JPEG, and TIFF), synchronized multi-image display, stepless zooming, slide browsing while scanning, annotations, screen capture, slide loader control (multiple tray loader only)	
Fluorescence (optional)	Fluorescence Components	Fluorescence illuminator with fly-eye lens, motorized mirror turret, motorized filter wheel, fluorescence light source (Excelitas X-cite XYLIS or X-cite TURBO)	
	Monochrome Camera	1-inch CMOS, 3.45 µm × 3.45 µm pixel size (image acquisition with binning 2 × 2), high sensitivity, high resolution or HAMAMATSU ORCA Flash4.0 V3 or HAMAMATSU ORCA Fusion	
Desktop Software (optional)	Solution License	Deep Learning (optional), image analysis (optional), image format converter (optional), 3D deconvolution (optional)	
Environment	Weight	Optical frame: 69 kg (152.1 lb) Fluorescence: 8 kg (17.6 lb) PC and monitor: 16 kg (35.3 lb) 1 slide tray: 0.6 kg (1.3 lb)	Optical frame and multiple tray loader: 142 kg (313 lb) Fluorescence: 8 kg (17.6 lb) PC and monitor: 16 kg (35.3 lb) 35 slide trays: 21 kg (46.3 lb)
	Operating Environment	Temperature: 12 °C–28 °C (53.6 °F–82.4 °F), humidity: up to 80% (non-condensing)	
	Power Consumption	221 W	
	Power Supply Ratings	Input: 100–240 V AC; 50/60 Hz; 4 A Output: 24 V DC, 9.2 A, 221 W max	

*1 Optional phase contrast objectives are required.
*2 Optional analyzer mirror unit and motorized fluorescence mirror turret are required.

CLASS 1 LASER PRODUCT
IEC60825-1:2007
IEC60825-1:2014
クラス 1 レーザ 製品 JIS C6802:2014
1 类激光产品 GB7247.1-2012

Image data are courtesy of the following institutions:

Cortico-thalamic projection pathways labeled with AAV-GFP and AAV-tdTomato. Image data courtesy of Hong Wei Dong, MD, Ph.D., Professor of Neurology, Keck School of Medicine of University of Southern California. (left, cover)

Colon stained with Masson's Trichrome. Image data courtesy of NJ Rutgers Cancer Center—Wenjin Chen. (right, cover)

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- OLYMPUS CORPORATION is ISO9001 certified.
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Shinjuku Monolith, 2-3-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo 163-0914, Japan