

ALPHA³

FACILITY EDITION
LIGHT SHEET MICROSCOPE



EVIDENT™

PhaseView

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ULTRA-THIN LIGHT SHEET
AUTOMATED MULTISCALE
MULTI SAMPLE IMAGING
UNRIVALED USER EXPERIENCE

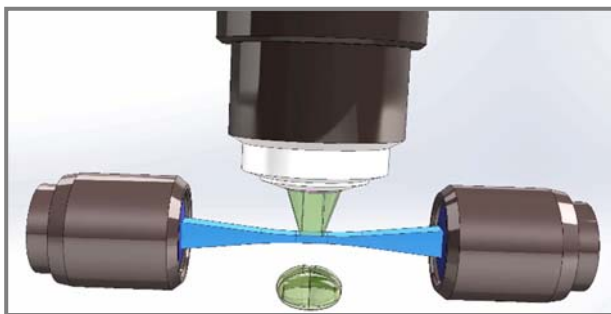
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Ultra-thin light sheet microscope

Key technologies for best qualitative and quantitative imaging

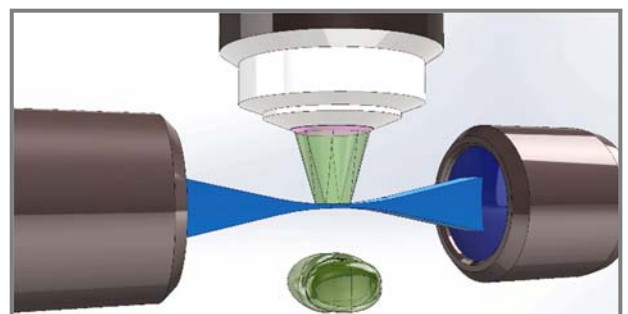
The *Alpha³ Facility Edition* combines key patented technologies to provide a uniform, optimally resolved and full field light sheet image. The *Facility Edition* comprises smart dual illuminators coupled with a wide field detection microscope; each multidirectional light sheet illuminator performs real time focus sweeping to extend the thinnest focus area over the entire field of view while improving homogeneity for artefacts-free imaging.

**Dual illumination
for maximum light coverage**



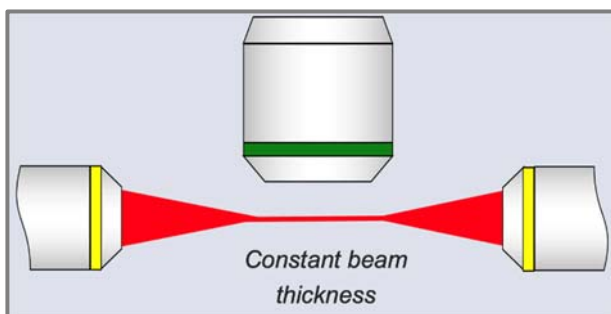
The illumination comes from both sides simultaneously to illuminate the maximum area on the sample. The dual illuminators ensure homogeneous light coverage for small and very large specimen.

**High illumination NA
for thinnest optical sectioning**



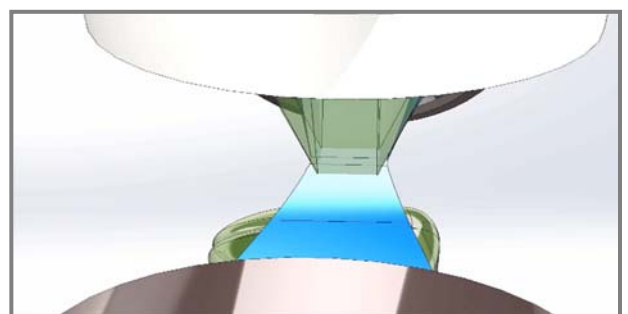
The optical design provides an extended working distance with an increased illumination NA for producing a very thin optical section with an optical compensation for large amounts of medium.

**Focus sweeping
For optimized sharpness**



The real time laser focus sweeping provides an optimized sharpness on the entire field of view. The result is that the sharpest area is extended across the whole field of view of the camera.

**High illumination lateral NA
for intensity homogeneity**

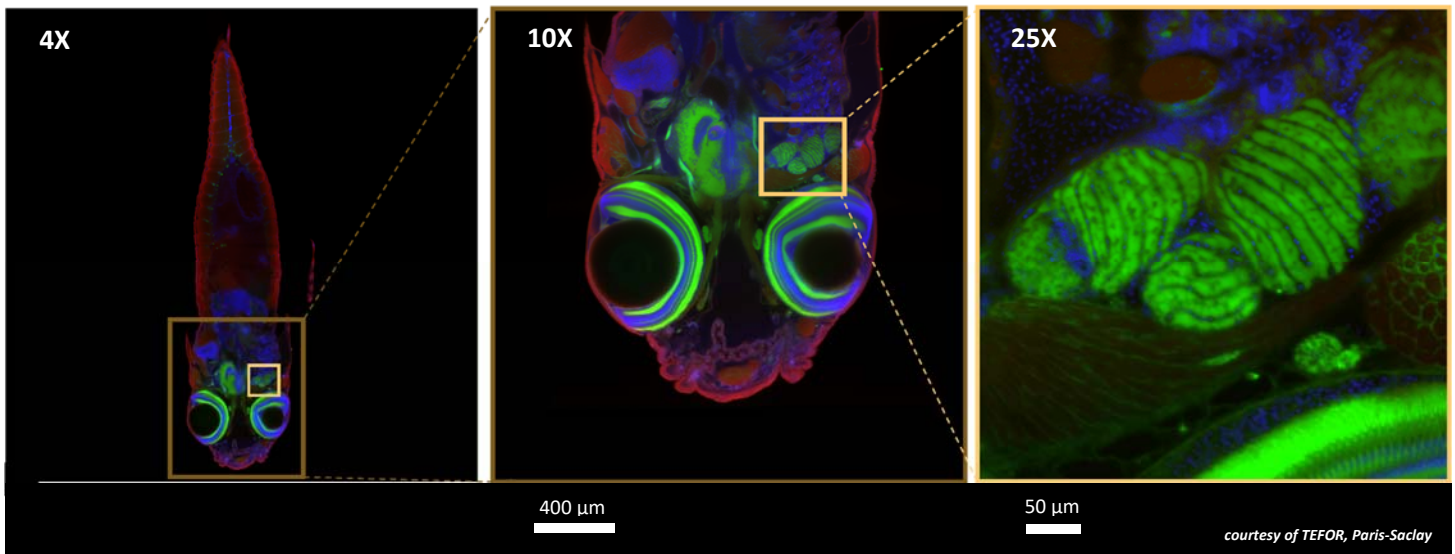


High illumination lateral NA enables stripe artifacts removal for absorbing or scattering specimen. This feature allows to virtually remove the illumination artefacts and shadowing, or striping effects.

Automated Multi Scale Imaging

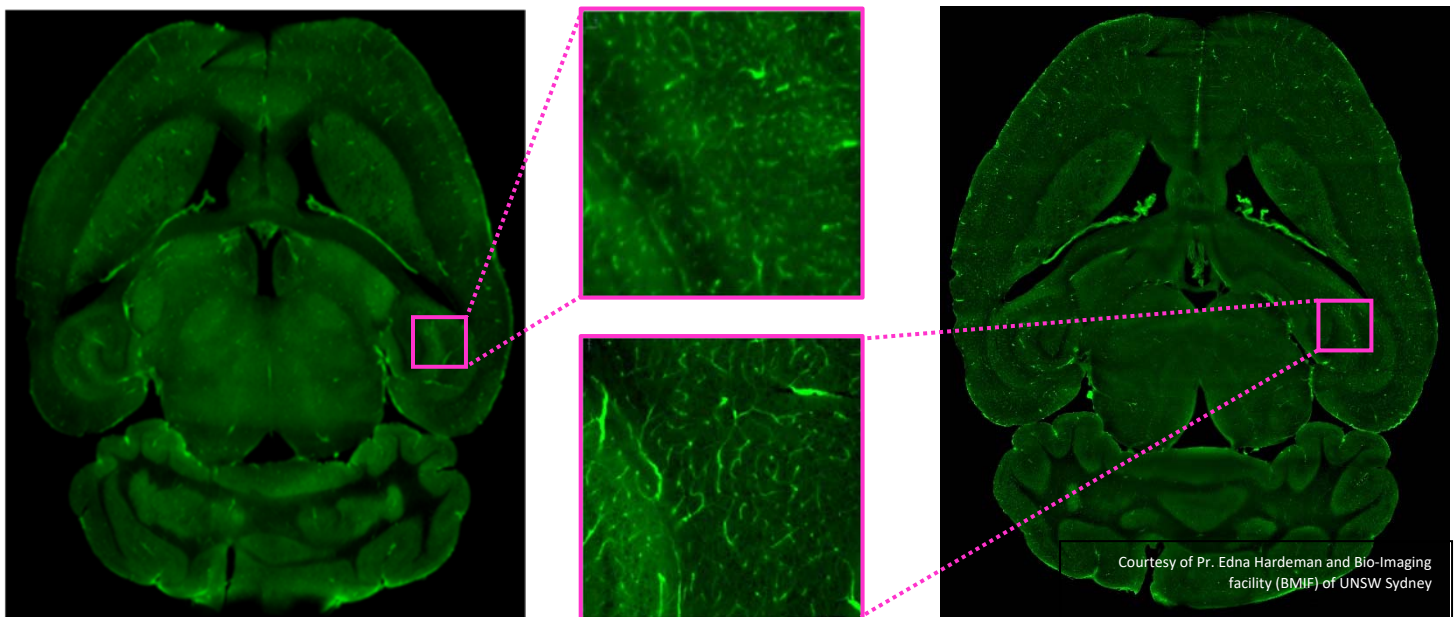
Automatic adjustments for any magnification change

The *Alpha3 Facility Edition* is a fully automated system that performs microscope configuration change and auto adjustments when changing objective magnification.



A typical imaging session starts with a quick sample screening using a low mag objective followed by image acquisition at higher magnification objective on a single or multiple regions of interest.

Thanks to the access of an extended range of lenses from 2X to 60X, a whole organism or organ can be imaged at a preferred XYZ resolution and acquisition speed

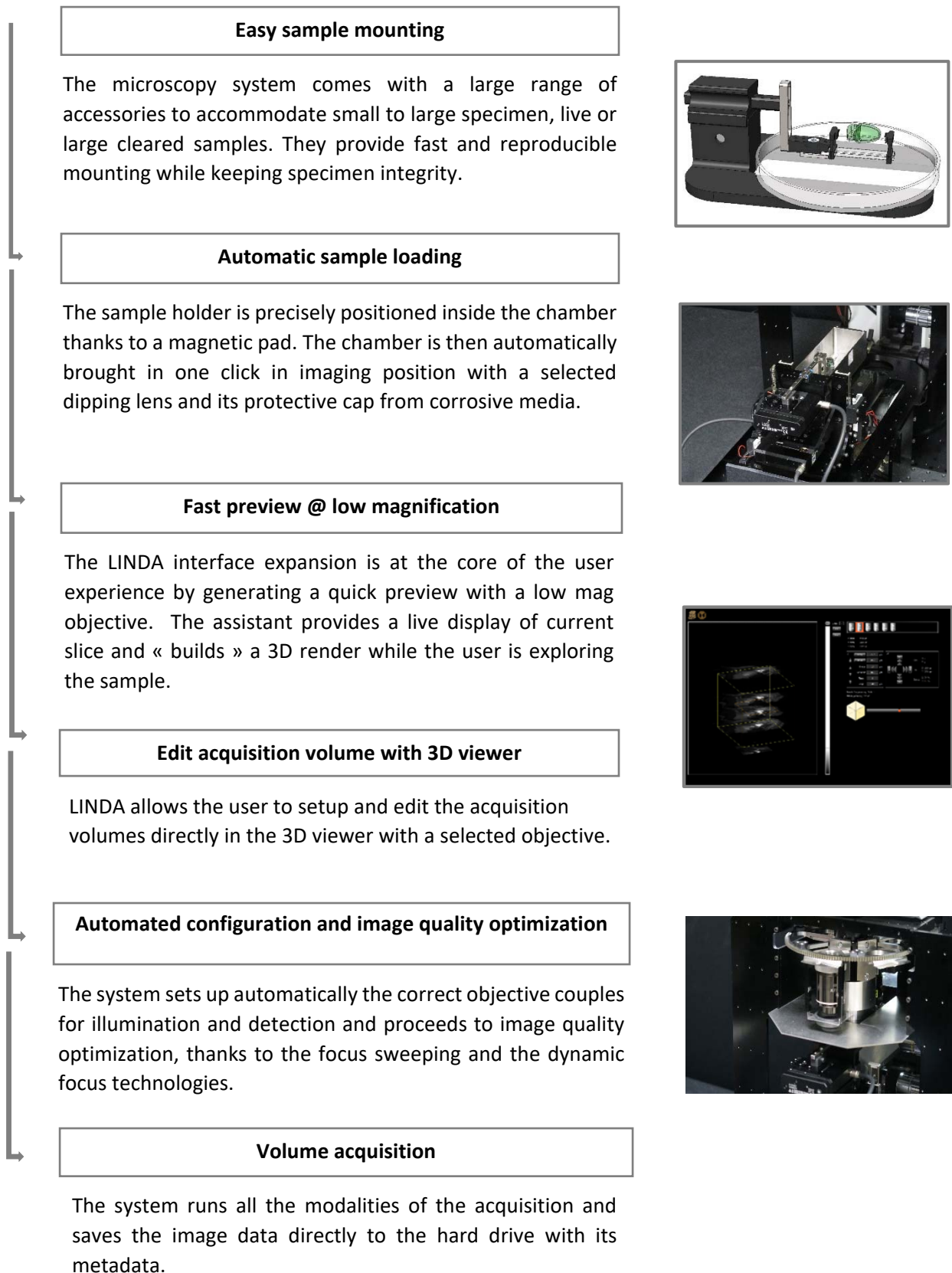


Whole mouse brain @4X
voxel size: 1.625 x 1.625 x 2 µm

Whole mouse brain @10X
voxel size: 0.65 x 0.65 x 1 µm

Unrivaled user experience with optimized workflow

Fast learning curve from sample mounting to image acquisition



Features and Benefits

LIGHT SHEET SYSTEM	
Patented dual multi-directional light sheet generators combined with upright optical microscope	
<p>Multi-directional light sheet generators Incl. Laser focus sweeping and Dynamic focusing</p> <p>Motorized illumination objective turret with up to 4 objectives mag / thickness: 2X / 9µm, 5X / 4µm, 10X / 1.5µm, 20X / 1µm*</p> <p>Laser combiner with up to 6 laser sources from 405nm to 785nm, 50 or 100mW</p>	<ul style="list-style-type: none"> ✓ Maximum light coverage ✓ Very thin light sheet with uniform thickness ✓ Image quality (diffraction limited) ✓ Intensity uniformity ✓ Flexible axial resolution ✓ Large choice of excitation wavelength
SAMPLE CHAMBER & MOUNTING ACCESSORIES	
<p>Chamber 250 ml, 50 W x 140 L x 40 H mm - reduction fitting for smaller volume</p> <p>Mounting accessories: glass support and clamps for large or multiple specimens, molds support for small and/or live specimen</p> <p>Sample travel range: 25 mm W x (25) 50 mm L x 15 mm H</p> <p>Chamber and sample observation with transmitted light and camera</p>	<ul style="list-style-type: none"> ✓ Compatible with very large samples (entire specimen or organs) and small specimen (e.g., zebrafish, c-elegans) ✓ Easy chamber access and cleaning ✓ Fast and reproducible specimen mounting ✓ Compatible with all clearing methods and highly resistant to corrosive media ✓ Allows for multi-sample acquisition ✓ Easy sample positioning check prior acquisition
AUTOMATED MULTISCALE MICROSCOPY SYSTEM	
<p>Illumination arms with motorized XYZ adjustments and motorized objective turret</p> <p>Sample holder with XYZ motorized stages 25W x 25(50)L x 15H mm, 0.1µm precision</p> <p>Motorized detection objective turret, up to 6 objectives</p> <p>Motorized filter wheel for 25mm emission filters diameter, up to 6 filters</p>	<ul style="list-style-type: none"> ✓ Auto adjustments with magnification change ✓ Automatic microscope configuration from macro to micro-objectives ✓ Acquisition presets for XY tiling, single or multiple ROIs, multi-sample acquisition ✓ Automated XYZTλ acquisition

DETECTION UNIT	
<p>BX43 upright fluorescence microscope stand with eyepieces, video port, transmitted light (for sample positioning)</p> <p>Detection objectives from 2X to 60X with intermediate magnification changer 2X</p> <p>Air, water, long working distance high NA clearing objectives with correction collar from 1.33 to 1.56</p> <p>Objectives protected with Teflon holders and cover glass, drop protection system</p> <p>Camera Hamamatsu sCMOS Orca Flash or Fusion BT (2048 x 2048 or 2300 x 2300, 6.5µm)</p>	<ul style="list-style-type: none"> ✓ Extended range from low to high magnification lenses ✓ Flexibility to meet any application and resolution requirements ✓ Objectives protected against corrosive media ✓ Easy objective cleaning and drop protection cuvette access ✓ Sensitive high QE camera, 16bit dynamic range
PC & SOFTWARE	
<p>QtSPIM interface for controlling all acquisition parameters, Z-stacking, XY tiling and sampling, timelapse acquisition</p> <p>LINDA interface expansion for interactive 3D display, stack navigation, and scan volume setup</p> <p>Desktop Intel Core i7, 64Go RAM, Nvidia GeForce RTX, Hard Disk 16To, SSD 2To, 2 x screens 42" OLED, Windows 10 / 64 pro</p>	<ul style="list-style-type: none"> ✓ All acquisition parameters in single window ✓ 3D volume preview on the fly to explore sample before scanning ✓ 3D viewer with interactive volume settings ✓ Direct export of raw images with metadata to open source or commercial 3rd party software ✓ PC configuration and software designed for seamless big data acquisition, transfer, and storage
SYSTEM SPECIFICATIONS	
<p>Class3B laser instrument, FCC (part15), CE mark, designed and tested according to DIN EN 61326-1 (10/2006), DIN EN 55011 (05/2010) et EN 61010-1 (06/2010)</p> <p>Microscope breadboard format 60 W × 90 L × 75 cm H; 35 Kg Electronic cabinet 56 L x 60 W x 70 H cm, 60 Kg 1 Desktop PC 55 L x 24 W x 56 H cm, 15 Kg 2 x screens 120 L x 20 W x 37 H cm, 15 Kg</p>	<ul style="list-style-type: none"> ✓ Robust and sturdy design ✓ Reduced maintenance and service costs