PhaseView®

Alphα³

FACILITY EDITION

ULTRA-THIN LIGHT SHEET

UNRIVALED USER EXPERIENCE

ALPHA³ FACILITY EDITION

Key technologies for best qualitative and quantitative imaging

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.
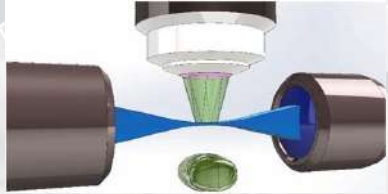
High illumination NA for thinnest optical sectioning

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.
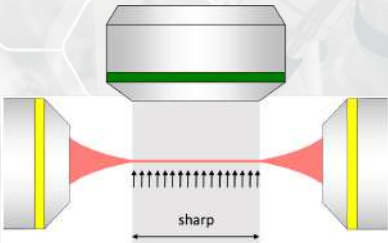
Focus sweeping for optimized sharpness

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.
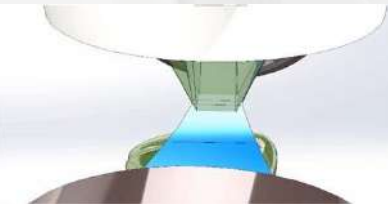
High illumination lateral NA for intensity homogeneity

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.

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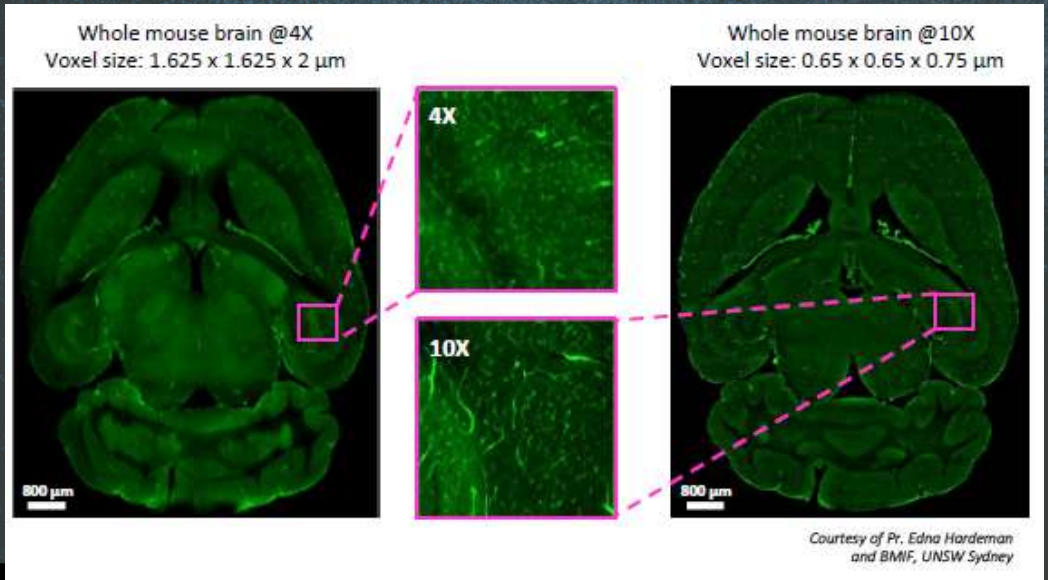# ALPHA3 FACILITY EDITION
AUTOMATED MULTI-SCALE IMAGING

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.
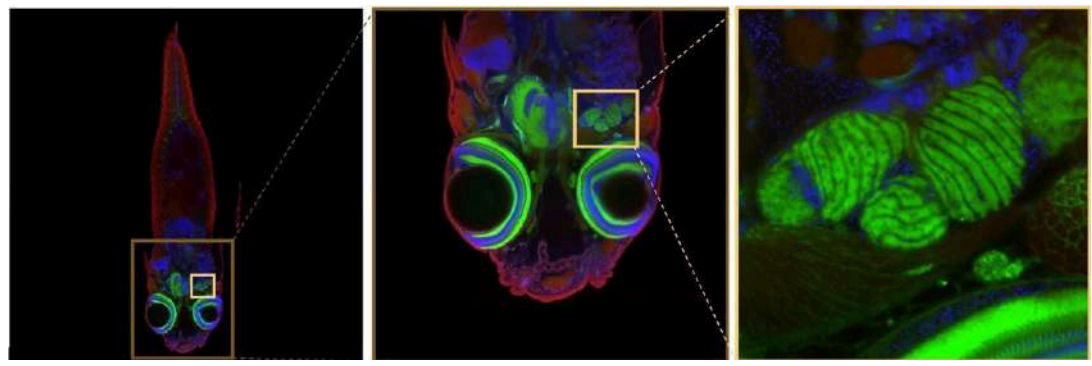
A typical imaging session starts with a quick sample screening using a low mag objective followed by image acquisition at higher magnification objective on a single or multiple regions of interest.
Thanks to the access of an extended range of lenses from 2X to 60X, a whole organism or organ can be imaged 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 0.75 µm

4X

10X

800 µm

800 µm

Courtesy of Pr. Edna Hardeman
and BMIF, UNSW Sydney

ALPHA³ FACILITY EDITION

UNRIVALED USER EXPERIENCE WITH OPTIMIZED WORKFLOW

Fast learning curve from sample mounting to image acquisition
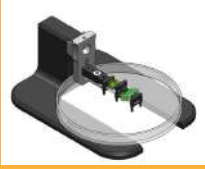
Easy multi-sample mounting

The microscopy system comes with a large range of accessories to accommodate small to large specimen, live or large cleared samples. They provide fast and reproducible mounting while keeping specimen integrity.


Automatic sample loading

The sample holder is precisely positioned inside the chamber thanks to a magnetic pad. The chamber is then automatically brought in one click in imaging position with a selected dipping lens and its protective cap from corrosive media.

Fast preview & low magnification

The LINDA interface expansion is at the core of the user experience by generating a quick preview with a low mag objective. The assistant provides a live display of current slice and « builds » a 3D render while the user is exploring the sample.
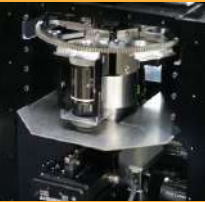
Edit acquisition volume with 3D viewer

LINDA allows the user to setup and edit the acquisition volumes directly in the 3D viewer with a selected objective.

Automated configuration and image quality optimization

The system sets up automatically the correct objective couples for illumination and detection and proceeds to image quality optimization, thanks to the focus sweeping and the dynamic focus technologies.

Volume acquisition

The system runs all the modalities of the acquisition and saves the image data directly to the hard drive with its metadata.

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3D viewer with interactive volume scan settings

The LINDA interface expansion is at the core of the user experience by generating a 3D volume preview on the fly to explore sample before scanning. The assistant provides a live display of current slice and « builds » a 3D render while the user is exploring the sample. LINDA allows the user to interact with the 3D rendering to set the scan volume along with the acquisition parameters.

Slice View
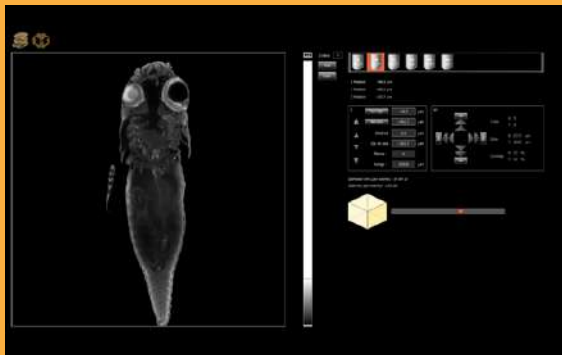
3D View
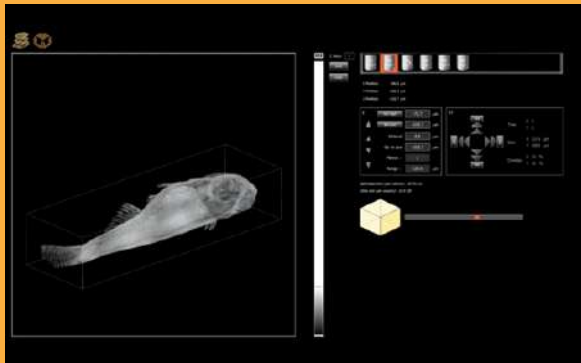
FEATURES AND BENEFITS

LIGHT SHEET SYSTEM
Patented dual multi-directional light sheet generators combined with upright opticalmicroscope

Multi-directional light sheet generators
Incl. Laser focus sweeping and Dynamic focusing

Motorized illumination objective turret with up to
3 objectives mag / thickness 2X / 9µm, 5X / 4µm, 10X / 1.5µm,

Laser combiner with up to 6 laser sources from
405nm to 785nm, 50 or 100mW

- Maximum light coverage
- Very thin light sheet with uniformthickness
- Image quality (diffraction limited)
- Intensity uniformity
- Flexible axial resolution
- Large choice of excitation wavelength

SAMPLE CHAMBER & MOUNTING ACCESSORIES

Chamber 250 mL, 50 W x 140 L x 40 H mm -
reduction fitting for smaller volume

Mounting accessories: glass support and clamps
for large or multiple specimens, molds support for
small and/or live specimen

Sample travel range:
25 mm W x (25) 50 mm L x 15 mm H

Chamber and sample observation with transmitted light and
camera

- 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

Illumination arms with motorized XYZ adjustments
and motorized objective turret

Sample holder with XYZ motorized stages 25W x
25(50)L x 15H mm, 0.1µm precision

Motorized detection objective turret, up to 6
objectives

Motorized filter wheel for 25mm emission filters, up to 6 filters

- Auto adjustments with magnification change
- Automatic microscope configuration from macro to micro-objectives
- Acquisition pre-sets for XY tiling, single or multiple ROIs, multi-sample acquisition
- Automated XYZTθ acquisition

FEATURES AND BENEFITS

DETECTION UNIT

BX43 upright fluorescence microscope stand with eyepieces, video port, transmitted light
(for sample positioning)

Detection objectives from 2X to 60X with intermediate magnification changer 2X

Air, water, long working distance high NA clearing objectives with correction collar from 1.33 to 1.56

Objectives protected with Teflon holders and cover glass, drop protection system

Camera Hamamatsu sCMOS Orca Flash or Fusion BT (2048 x 2048 or 2300 x 2300, 6.5µm))

- 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

QtSPIM interface for controlling all acquisition parameters, Z-stacking, XY tiling and sampling, timelapse acquisition

LINDA interface expansion for interactive 3D display, stack navigation, and scan volume setup

Desktop Intel Core i7, 64Go RAM, Nvidia GeForce RTX, Hard Disk 16To, SSD 2To, 2 x screens 42" OLED, Windows 10 / 64 pro

- 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

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)

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

- Robust and sturdy design
- Reduced maintenance and service costs

CONTACT US

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