

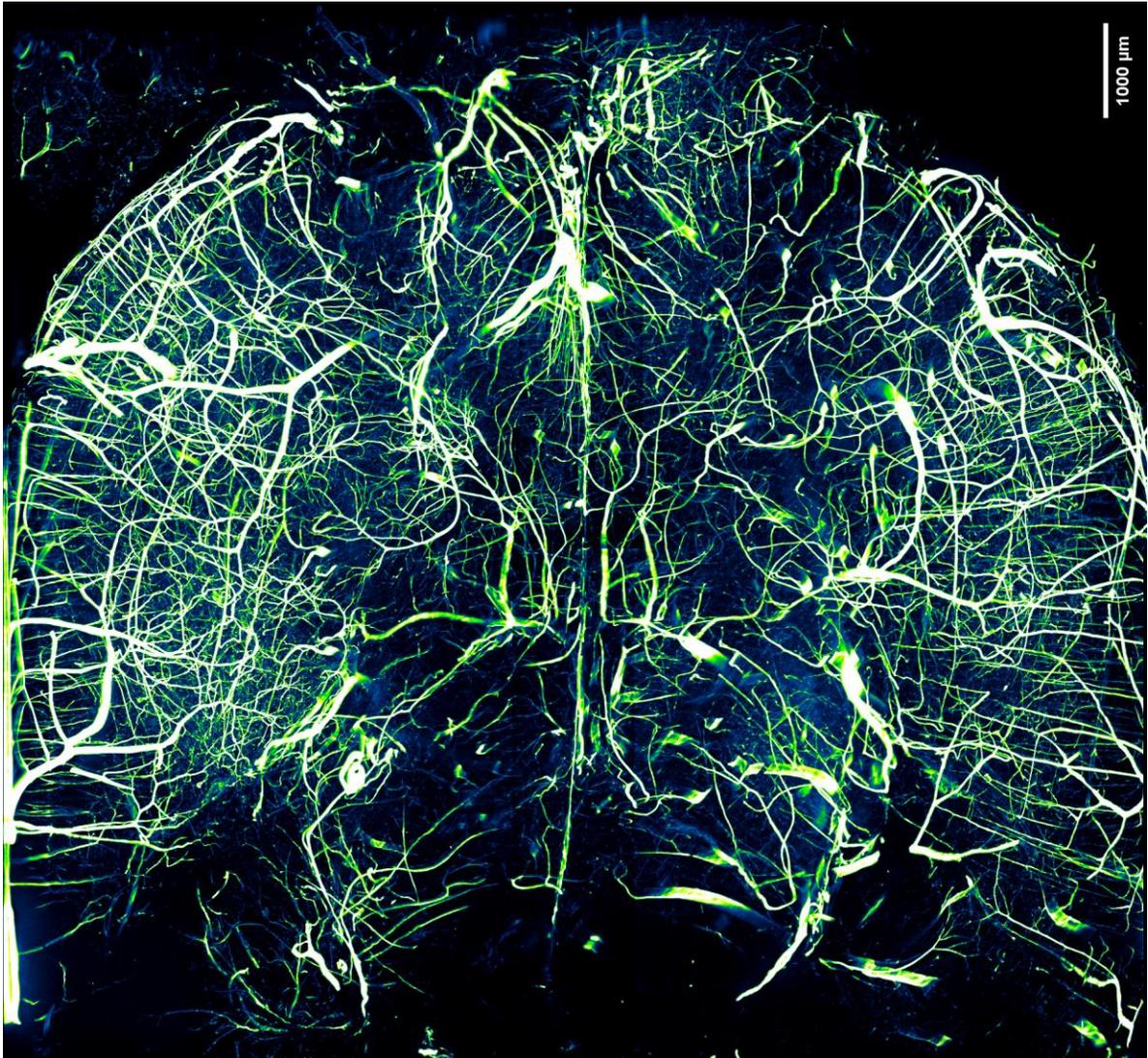


LiTone XL Light-sheet Microscope

The ideal light sheet system for large sample imaging

Product Information V 2.5

A versatile tool for imaging large cleared tissue with extraordinary resolution



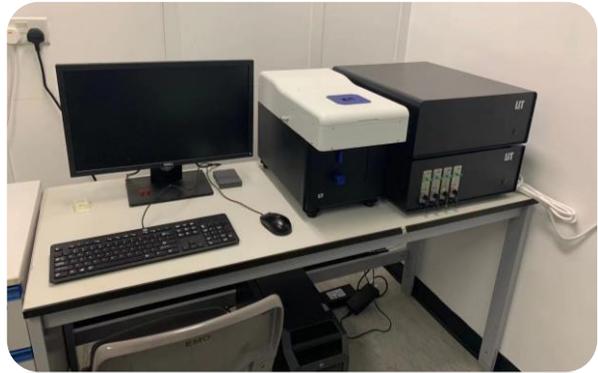
Z-projection of blood vessel in cleared mouse brain

The LiTone XL light-sheet microscope is designed to image large sample in 3D with resolution and speed. This powerful platform utilizes the **Line Bessel Sheet (LBS)** technology and features a unique **4-side illumination** configuration providing the most uniform sample illumination in the market. The LiTone XL microscope is equipped with **refractive index (RI) correction optics** adjustable from 1.33 to 1.56 to ensure the best imaging quality in various immersion medium. The exchangeable sample chamber can host samples with size up to **2cm by 2cm**.

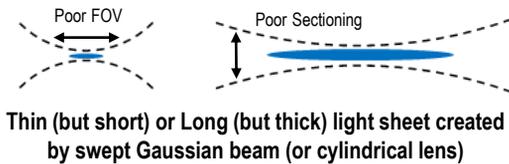
Applications of the microscope includes imaging of large cleared tissue or organ samples processed by most of the protocols in either water-based or solvent-based methods, as well as imaging of living transparent samples such as zebrafish or drosophila embryos in large quantity by a single click with the build-in multi-position scan function.

Key features

- **LBS light-sheets and RI correction optics** for the best performance. Resolution up to 500nm
- **Unique four-side illumination** significantly increase the illumination depth and uniformity especially in large cleared samples
- **Capable of long-term imaging for living embryos.** LiTone XL is designed for cleared tissue imaging but is also a proven platform for imaging live Zebrafish or Drosophila embryos with much higher through-put than conventional light sheet microscopes.
- **Smart and user-friendly LitScan software** with rapid data processing, built-in 3D rendering, multi-position acquisition auto-stitching and deconvolution
- **Compact bench-top design** with build-in vibration isolation. No air-table is required



Compact bench-top design of LiTone XL light sheet microscope



Thin (but short) or Long (but thick) light sheet created by swept Gaussian beam (or cylindrical lens)



Ultrathin long LBS in LiTone Microscope

The Line Bessel Sheet (LBS) technology

The LBS is sophisticatedly crafted to be much thinner and longer than traditional Gaussian light sheets, therefore the LiTone LBS is not only powerful in its low rate of photo toxicity and imaging speed, but also excels in 3D resolution and signal to noise ratio owing to its much-improved sectioning ability.

Illumination and detection

LiTone XL generates 4 LBS light sheets with equal power that enters the sample from all four orthogonal sides to maximize FOV and reduce shadowing effect.

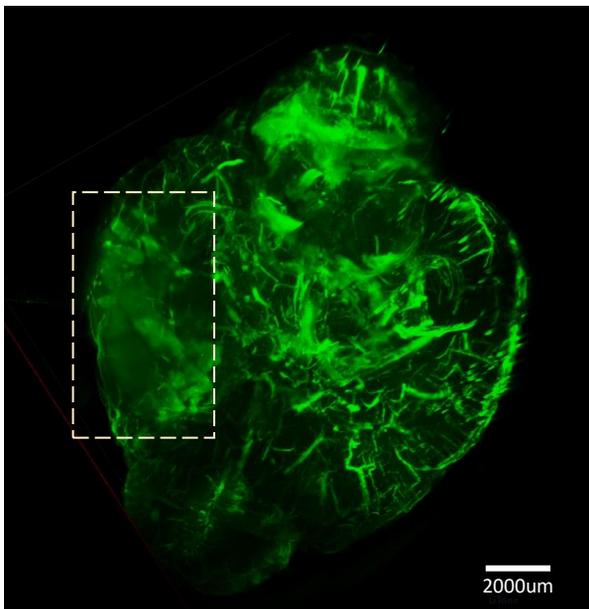
The system accepts a range of detection objectives including glycol/water immersion objectives or air objectives from 2x to 20x. The system features an adjustable optical system that corrects immersion RI from 1.33 to 1.56 when air objective is used.



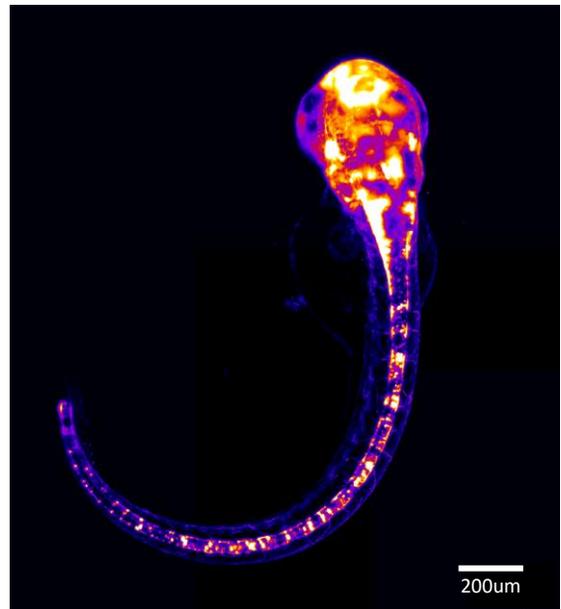
The unique 4-side LBS illumination in LiTone XL microscope

Applications

LiTone XL microscope is designed to provide extended field of view with the best resolution possible for imaging large cleared samples such as organs, brains and embryos. The solvent-resistant exchangeable sample bath is compatible to all available clearing solution. LiTone XL's ability to image multiple small living embryos (e.g. zebrafish, drosophila embryos) over a long period of time offers extra versatility to the user.



Full mouse brain 3D imaging. Marked region shows the lesion of stroke



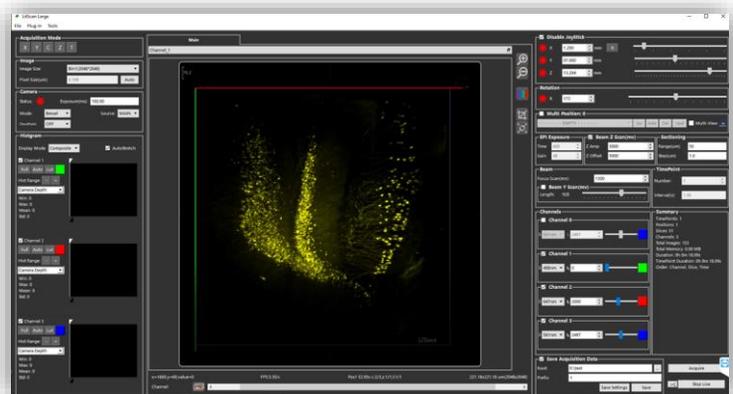
Living zebrafish embryo (GFP motor neuron, 24-36hpf)

On-the-fly data processing

Handling large imaging data is always dreadful, especially for large cleared samples where TBs of raw data need to be processed, transferred and stored.

Our latest LitScan V control and analysis software offers build-in **5D data rendering package** that allows on-the-fly 3D viewing and sophisticated movie rendering by a few clicks right after the data is taken into the memory.

LitScan integrates a set of useful data processing functions such as **fast 3D deconvolution**, **automatic stitching** and more. Save your budget from purchasing a third-party rendering software as LitScan does them all.



LitScan v2.0 control and analysis software rendering 3D structure of hippocampus region in a cleared brain sample

Specifications

| | |
|---------------------------------------|--|
| Available wavelengths | Any combinations of 405nm (DAPI),488nm (GFP), 532nm (Cy3.5), 561nm (mCherry), 647nm (Alexa647); Others also possible |
| Recommended Objectives | 2X Plan ApoChro Long WD Objective, N.A.0.14, air/water; 4X Plan ApoChro Long WD Objective, N.A.0.28, air/water; 10X Plan ApoChro Long WD Objective, N.A. 0.5, air; 20X Plan ApoChro Objective, N.A.1.0, multi-medium immersion; Other objectives also possible Incl. adjustable RI correction tube lens for air objectives |
| Field of View | 6x6mm/3x3mm/1.2x1.2mm/0.6x0.6mm FOV for 2X/4X/10X/20X objectives. Can be multiplied by stitching |
| Illumination Mode | Four-side illumination with Line Bessel Sheet (LBS) technology |
| Light-sheet Parameter Settings | Mode 1: Thickness=1 μ m; For 20X objective Mode 2: Thickness=1.5 μ m; For 10X objective Mode 3: Thickness=3 μ m; For 4X objective Mode 4: Thickness=5 μ m; For 2X objective Other settings available by request |
| Sample Size | From 200 μ m to 20 mm diameter |
| Detection Camera | sCMOS camera, 16bits, 2048 by 2048 pixels full frame, 6.5 μ m pixel size; Peak Quantum Efficiency > 82% @ 560nm |
| Detection Speed | 80 frame per second at 2048 x 2048 frame size |
| Spatial Resolution | For 10X air objective: 0.6 μ m lateral by 1.5 μ m axial (with light-sheet mode 2) For 20X immersion objective: 350nm lateral by 1 μ m axial (with light-sheet mode 1) |
| Sample Mounting | Transparent-well mounting for cleared tissue samples; FEP or agarose mounting for live or fixed embryos |
| Sample Positioning | Full motorized high-precision XYZ sample stages |
| Software | LitScan microscope control & data rendering software. Real time 3D rendering, auto stitching & deconvolution included |