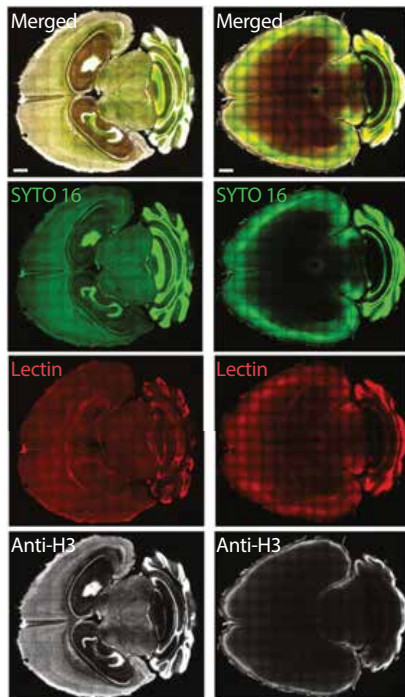# SMARTLABEL

The World's First 3D Active Antibody Immunostaining Device

Combines Stochastic Electrotransport (Kim, PNAS, 2015) technology and SWITCH (Murray, Cell, 2015)

Merged Merged

SYTO 16 SYTO 16

Lectin Lectin

Anti-H3 Anti-H3

Staining of a CLARITY-processed whole mouse brain within one day using Stochastic Electrotransport (left) compared to passive staining (right) (Kim, PNAS, 2015)

FAST, EASY, AND RELIABLE

Speed: Order of magnitude faster than passive labeling (1-3 days compared to weeks or months)

Easy: Plug-and-play

Reliable: Prevents tissue damage with Stochastic Electrotransport technology (Kim, PNAS, 2015). Our nanoporous membranes (patent-pending) eliminate tissue contamination and probe loss.

COMPLETE AND UNIFORM LABELING

Complete: Full staining of organ-scale samples (e.g., mouse brain)

Uniform: Unparalleled signal uniformity throughout the sample

COST SAVINGS BY AVOIDING TARGET SATURATION

Antibody Savings: Complete and cost-effective labeling with a small amount of antibody by preventing antibody depletion

COMPATIBLE WITH MANY CLEARING TECHNIQUES INCLUDING:

- CLARITY (Chung, Nature, 2013)
- SWITCH (Murray, Cell, 2015)
- MAP (Ku, Nature Biotechnology, 2016)

Top View

Probes

Buffer Molecules
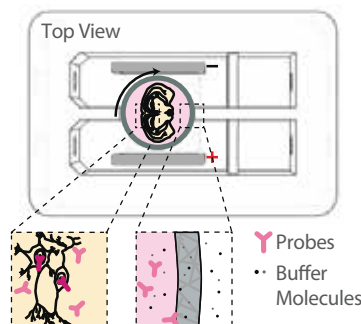
Nanoporous membrane retains antibodies inside sample chamber and protects against contamination (Kim, PNAS, 2015).

Join the Early Adopter Program

EMAIL
LABELING@LIFECANVASTECH.COM

OR VISIT
LIFECANVASTECH.COM

SmartSPIM

Light sheet imaging system optimized for resolution, speed, and flexibility for large samples

SmartSPIM is an advanced light sheet microscope capable of imaging large tissue samples with high speed and resolution. The system was designed from the ground up, with no limitation based on commercially available microscope bodies. The unique illumination arm of the SmartSPIM creates a flat–top illumination profile laterally, and a focused beam axially. To achieve homogeneous axial point spread functions (PSF) across the entire FOV, the illumination optics scan the beam axially while synchronized to the camera's detection.
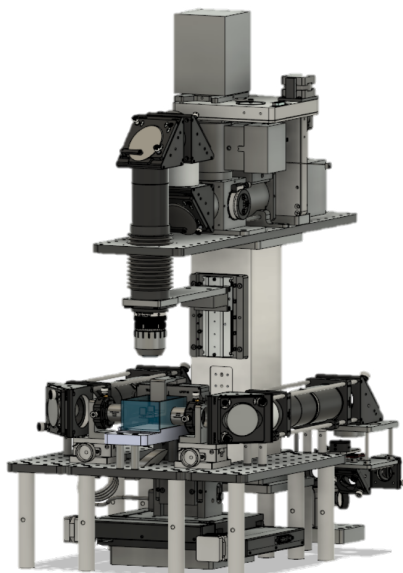

Features & Highlights

- Capable of imaging a wide range of sample sizes

- High axial resolution obtained with a variety of different custom and commercial objectives

- Uniform axial resolution across the entire sample

- High speed volumetric imaging

- Ability to use custom and commercially available objectives

- Custom illumination and detection optics optimized for all current large format objectives and camera

- Automated focus compensation for RI mismatches and chromatic focal shifts

- Compatible with both aqueous and organic clearing methods

Specifications

LIGHT SHEET FORMATION	Dynamically axially swept light sheet
ILLUMINATION OPTICS	NA = 0.25 broadband chromatically corrected
SPECIMEN SIZE (MAX)	2 cm x 3 cm x 1.2 cm
DETECTION OPTICS	Infinity corrected (180 mm EFL tube lens)
LATERAL SAMPLING	3.6x = 1.8 µm/pix; 10x = 0.64 µm/pix
AXIAL RESOLUTION	3.6x, NA 0.2, PSFz < 4.5µm ; 10x*, NA 0.6, PSFz <2.5 µm
FIELD OF VIEW (FOV)	3.6x = 3700 µm ; 10x* = 1300 µm
IMAGING SPEED	20 FPS during z–stack acquisition
CAMERA	2048 x 2048 sCMOS with rolling shutter – synchronized to light sheet for confocal detection
LASER LINES	Up to 6 in a single combiner. Wavelengths from 488 – 785 nm

* Olympus 10x objective (XLPLN10XSVMP)
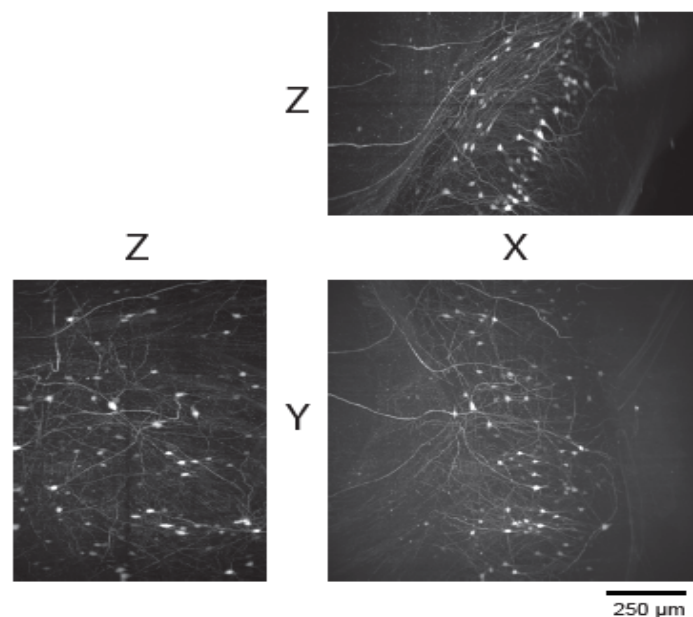
SmartSPIM image of fluorescent protein expression in a subset of neurons. High–resolution axial spacing (2µm) enables seamless display of original XY–dimensional data in orthogonal directions (XZ & YZ), providing for accurate identification of each cell body