



SmartBatch+: *New high-throughput system for rapid active tissue clearing and immunolabeling.*

SmartBatch+ combines active tissue clearing, leveraging our new **Clear+** system, and active immunolabeling into one **turn-key batch tissue processing device!** Now you can clear and label up to **12 whole mouse brains in just one day.**

An advance on our founder's CLARITY method, Clear+ tissue clearing provides **maximum optical transparency with no tissue expansion;** eFLASH and patented SE technologies then **uniformly label whole organs** from surface to core.



TISSUE PRESERVATION



SHIELD
Exceptional protection of fluorescent proteins & molecular information.

ACTIVE 3D CLEARING & LABELING



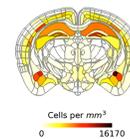
SmartBatch+
Ultrafast turn-key system for batch tissue clearing & labeling.

SPIM IMAGING



SmartSPIM
Light sheet imaging optimized for resolution, speed, & flexibility for large samples.

IMAGE ANALYSIS



SmartAnalytics
Information-rich, seamless, and actionable 3D data analysis.

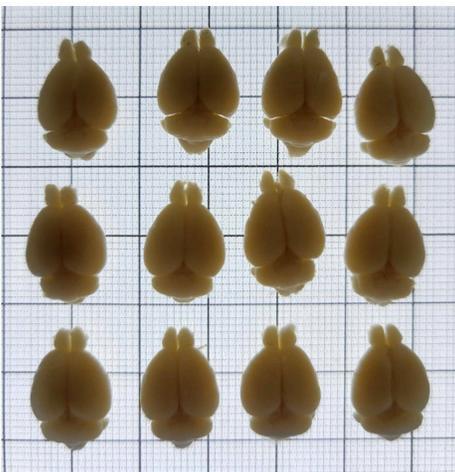
FEATURES & HIGHLIGHTS

- **Multi-functional:** SmartBatch+ switches between clearing and labeling modes simply by changing buffers.
- **Fast, uniform labeling:** Our system uses eFLASH technology (*bioRxiv* 2019), combining SWITCH (*Cell* 2015) with our patented stochastic electrotransport (SE, *PNAS* 2015) method to uniformly label intact tissue volumes.
- **Cost-effective:** SmartBatch+ uses just 4-20 μg of antibody per target to label a sample the size of a whole mouse brain, and requires <12 mins hands-on time per sample.
- **High-throughput:** Our device can actively clear or label up to 12 whole mouse brains, 2 whole rat brains, or comparably sized samples per batch.
- **Ideal for light sheet imaging:** Combined with SHIELD tissue preservation, SmartBatch+ protects fluorescent protein signal, antigenicity, and molecular & physical architecture through all tissue processing steps.

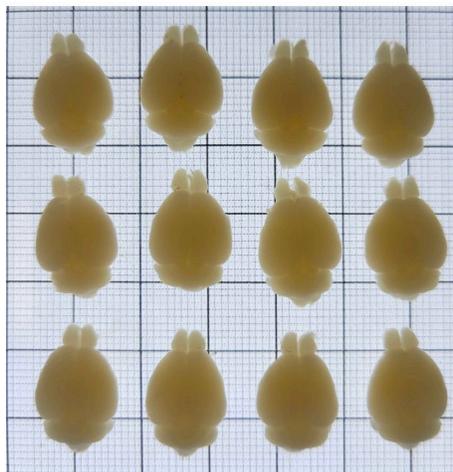


TISSUE CLEARING

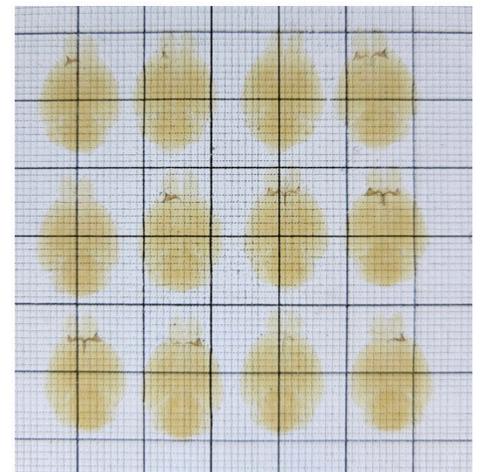
Combining electrophoretic clearing with our Clear+ tissue clearing method, a rotating electric field drives charged SDS micelles into samples for **quick and uniform** delipidation. Clear+ is the only known technique to produce **no change in sample morphology** after clearing. Compatible with **different tissue types** and **large intact samples**, SmartBatch+ clearing takes minutes to set up and **1 day** to complete.



Before delipidation



After delipidation



After index-matching

IMMUNOLABELING

Recently published advances on our patented SE method enable **antibody diffusion without surface saturation** and **uniform labeling** throughout intact volumes. SmartBatch+ also uses **an order of magnitude less antibody** than passive clearing methods such as iDISCO and CUBIC.

To date, we have validated and optimized >50 antibodies, providing coverage of popular targets related to neuroscience, cancer, development, and disease.

OUR OPTIMIZED TISSUE PROCESSING PIPELINE:

- Exceptional **tissue preservation** with SHIELD
- High-throughput, active **tissue clearing** using our Clear+ system with SmartBatch+
- Active **immunolabeling** with SmartBatch+
- **Refractive index-matching** with EasyIndex to optically clear samples
- Rapid, high resolution **light sheet imaging** with SmartSPIM
- Publication-quality **data analysis outputs** with SmartAnalytics

Header image sample courtesy of Prof. Helen Lai, UT Southwestern.