

TriTom

Small animal whole
body photoacoustic
fluorescence
tomography (PAFT)

- Multi-modal
- Easy-to-Use
- Tunable Laser
- 3D Data
- Fast Scan
- Non-invasive
- Quantitative
- Reproduceable
- Cost Effective

TriTom

The TriTom platform is based on Photoacoustic Fluorescence Tomography (PAFT) technology that provides unparalleled capabilities for whole-body imaging and in vivo characterization of small animal models. Complimentary 3D imaging modalities are integrated into a single powerful instrument by enabling co-registered photoacoustic imaging and fluorescence molecular tomography.

Combining high-resolution photoacoustic imaging with high-contrast fluorescence tomography allows deep tissue imaging, superior molecular sensitivity, and 3D localization of anatomical, functional, and molecular data. Utilizing an innovative and compact design, simultaneous co-registration of orthogonal photoacoustic and fluorescent optical data can be acquired. TriTom provides high-resolution robust anatomical registration of optical biomarkers while maintaining high molecular sensitivity.



Overview

TriTom is a dual-modality system in which 3D photoacoustic and fluorescence data are acquired simultaneously from the same volume within the subject. TriTom brings in vivo molecular imaging to the highest fidelity level, enabling quantitative volumetric measurements and up to 10 times improvement in spatial resolution compared to state-of-the-art optical methods. Three-dimensional visualization of optically labeled biological structures and processes are performed with robust anatomical registration over skin, central/peripheral vasculature, and internal organs displayed with a resolution approaching 100 μ m.

TriTom technology provides many advantages, including in vivo tracking, mapping, and longitudinal studies of externally labeled or internally expressed light-emitting or absorbing molecular constructs. Research areas such as cancer, toxicology, developmental biology, neuroscience, tissue engineering, and regeneration can greatly benefit from TriTom technology.

Features

- An imaging chamber with optimally arranged optical excitation ports and safety interlocks on dual access doors
- A 96-channel data acquisition unit optimized for detection of photoacoustic waves
- An electromagnetic interference protected 96-channel curved transducer array
- 360 degrees of angular coverage allowing 3D data
- Tunable optical parametric oscillator laser
- A sCMOS camera covering a broad range of fluorescent emission wavelengths
- A temperature control unit that maintains the sample environment within $\pm 0.1^\circ\text{C}$
- A water control unit that maintains clean, heated sound coupling medium with fill/drain/degassing
- Built-in anesthesia for small animal imaging
- A precision rotary stage enabling tomographic scan of the sample



Specifications

Specifications	TriTom Standard Edition	TriTom Premium Edition
Photoacoustic imaging	Yes	Yes
Fluorescence imaging	Yes	Yes
Spatial resolution	0.16 (X,Y), 0.47 (Z)	0.16 (X,Y), 0.47 (Z)
Time of a whole-body scan (s)	36 (360 angular acquisitions)	36 (360 angular acquisitions)
Laser	Tunable Pulsed	OPO
Laser wavelengths (nm)	532, 650-1300, extended NIR-II available	460-649, 650-1300, high-energy 1064
Fast wavelength tuning ability	Yes	Yes
Frame rate (Hz)	20	20

Applications

TriTom is a dual-modality system allowing anatomical, functional, and molecular imaging to all be performed within one system. Therefore, TriTom can provide and co-register multi-modal data within the same subject which is critical to understanding the biological mechanisms that underlie many diseases and potential therapies. As a result, TriTom is a valuable tool to numerous preclinical fields of research. Common applications include:



Cancer Research



Neuroscience



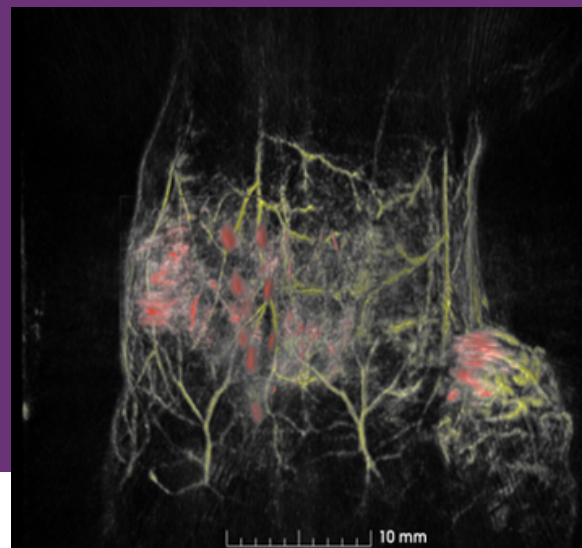
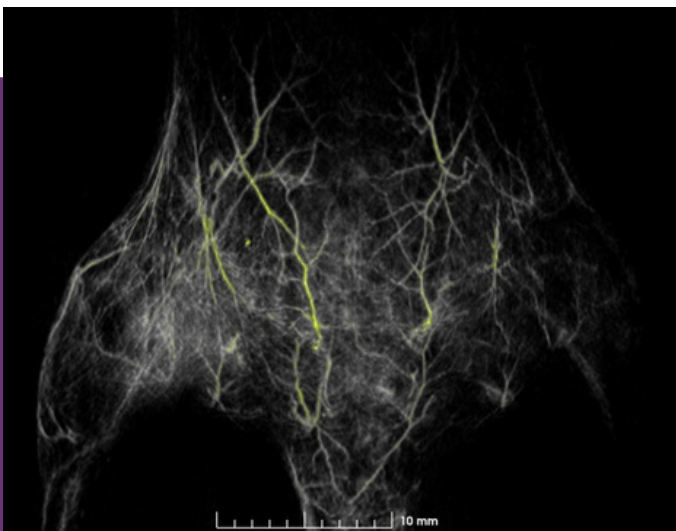
Angiography



Cell Tracking



Contrast Agent Development



Scintica:

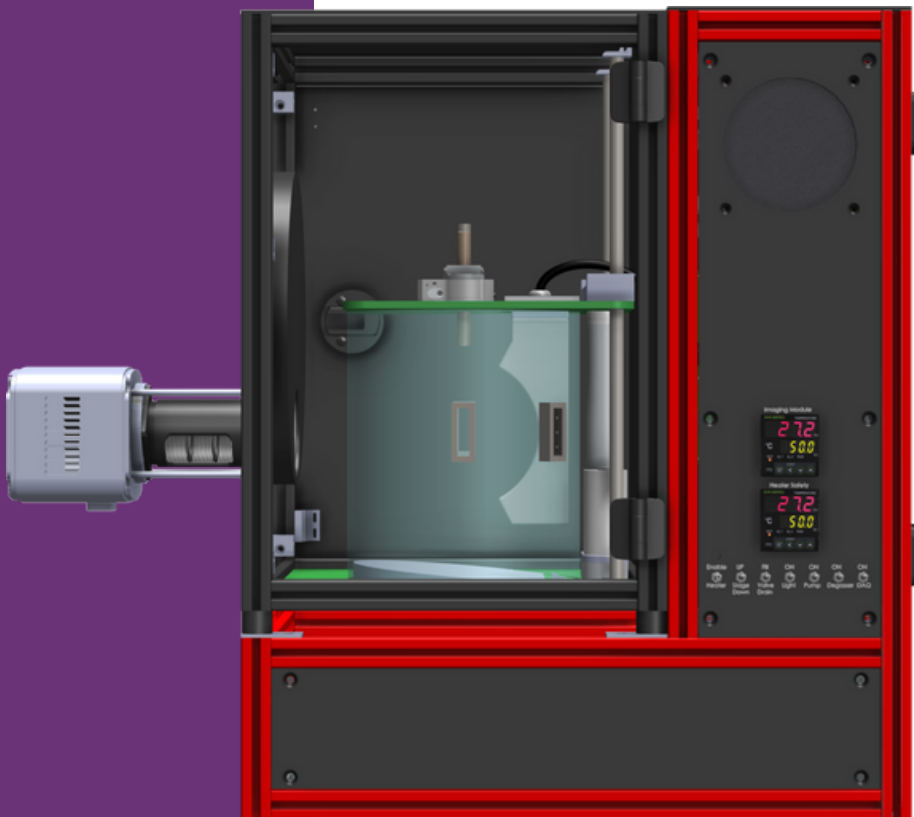
562 Waterloo St., Upper Unit
London ON
N6B 2P9

TEL: +1 519 914 5495

FAX: +1 226 884 5502

WEBSITE: www.scintica.com

EMAIL: info@scintica.com



PhotoSound[®] 
Imaging and Data Acquisition Solutions

S-Sharp Corporation
11F., no.217, Sec. 3, Beixin
Rd., Xindian Dist.,
New Taipei City 231,
Taiwan

WEBSITE: www.s-sharp.com