



OptichoM: High-speed Photoacoustic Microscopy

opticho



OptichoM

Photoacoustic microscopy (PAM) is a microscopic imaging tool to provide *in vivo* optically sensitive images in a deeper region of a body. Typically, a real-time imaging capability is vital to identify specific diseases in preclinical and clinical uses. However, conventional PAM has slow imaging speed because of motorized stage.

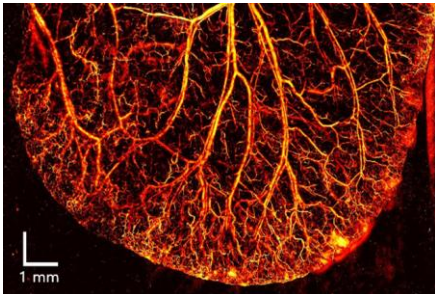
We introduce a high-speed and high-SNR PAM system based on a fast PA scanner and ring transducer. The scanning ability in water makes the PA scanner possible to reflect both ultrasound and laser beam, simultaneously. Confocally aligned laser and ultrasound can scan the sample in fast manner. By pairing with motorized stage module, this hybrid PAM system results in a wide scanning range with a high speed in both optical resolution (OR) and acoustic resolution (AR) PAM.

OptichoM Advantages

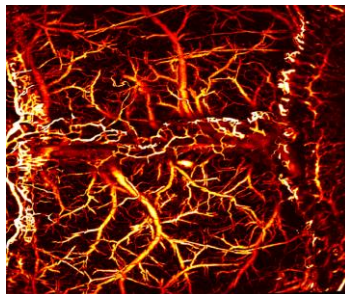
- ❖ Switchable Optical- and acoustic- resolution mode
- ❖ High-speed imaging capability
- ❖ Excellent signal to noise ratio
- ❖ Wide field of view imaging
- ❖ Optimized user interface
- ❖ Compact system size
- ❖ Suitable for both animal and human experiment

Applications

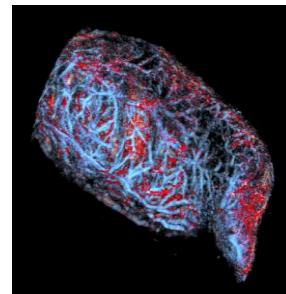
- ❖ *In vivo*, label free animal microvasculature imaging
- ❖ Human microvasculature imaging
- ❖ Molecular imaging
- ❖ Preclinical test (angiogenesis, sentinel lymph node, drug delivery, etc.)
- ❖ Clinical test (melanoma, burn wound, revascularization, etc.)



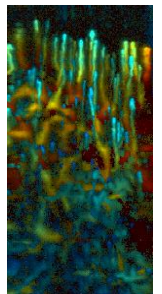
Mouse ear



Mouse brain



Mouse body (AR)



Human cuticle



System Specifications



Main Components

- ❖ Water-immersible PA galvanometer scanner
- ❖ Linear motorized stages
- ❖ Ring US transducer (Fc: 20 MHz)
- ❖ Opto-acoustic alignment module
- ❖ Digitizer (12bit, 500 MHz)
- ❖ Pulse laser (from Bright solutions)

	Optical-resolution	Acoustic-resolution
Lateral Resolutions	5 μm	100 μm
Imaging depth	0.7 mm	2.5 mm
Axial Resolution	50 μm	
Signal to noise ratio	40 dB	
Imaging speed	1-200 Hz (B-scan)	
Field of view	26 x 26 mm ²	
Accessories	<ul style="list-style-type: none"> • Optical fiber coupling optics • Motorized sample stage (vertical) • Real-time 3D rendering software included • Enclosure for laser and scanning module 	



Sol 5W 532nm
(Bright Solutions)

Pulse laser

Wavelength	532 nm
Pulse repetition rate	Single shot to 200 kHz
Output power	5 W
Pulse width	6 ~ 80 ns
Beam quality (M2)	<1.5



Dimension Drawings

