Clinical Feasibility Study of Combined Opto-Acoustic and Ultrasonic Imaging Modality Providing Coregistered Functional and Anatomical Maps of Breast Tumors

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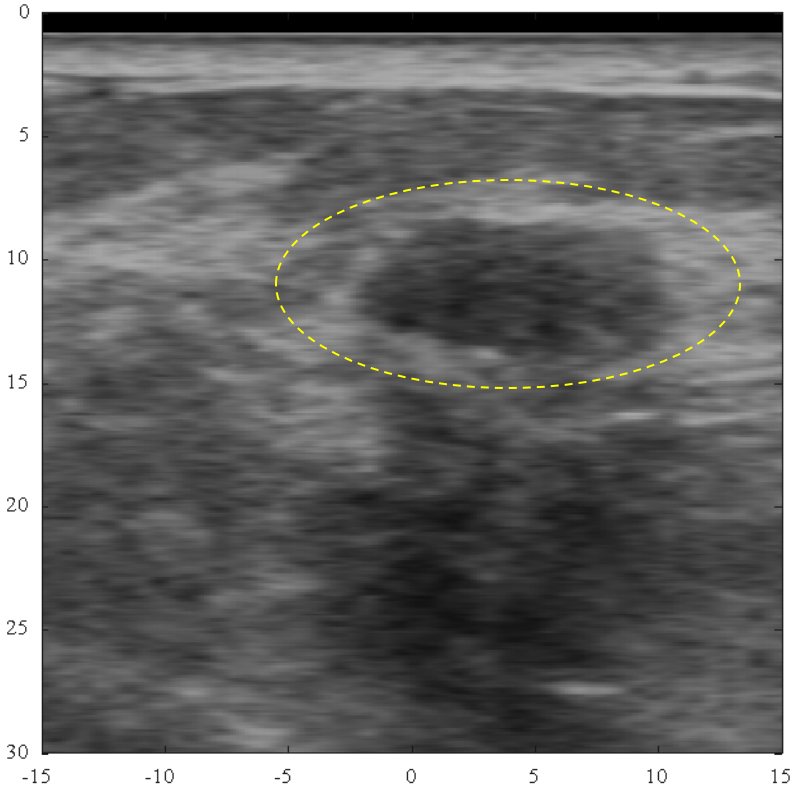
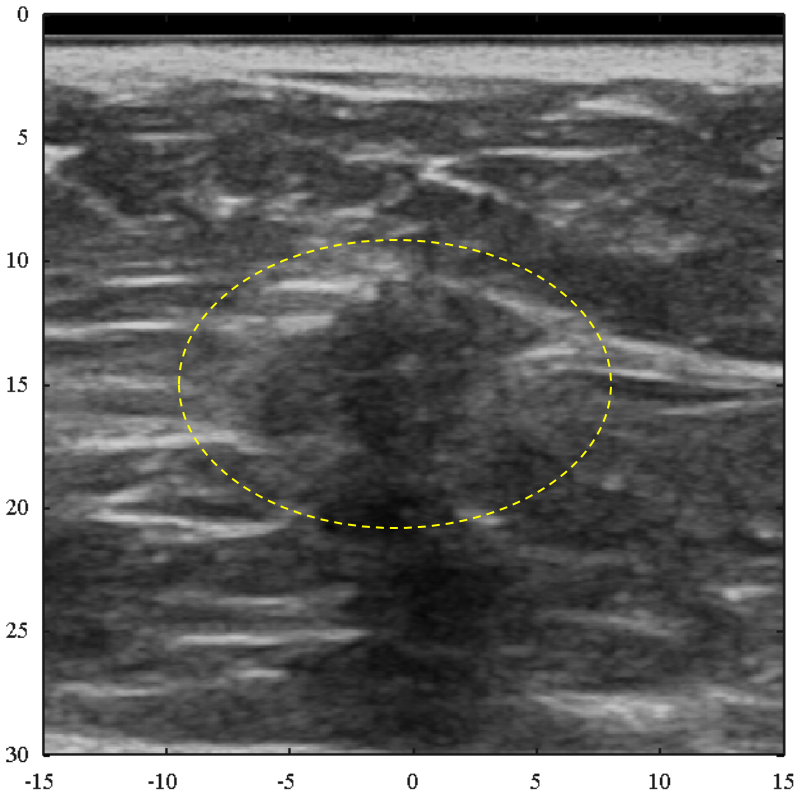
Ultrasound Breast Lesions





Clinical Breast Imaging

- MRI, X-ray, PET, Ultrasound
- Not specific or sensitive enough
- Need imaging modality that can help reduce unnecessary biopsy and improve early detection

The Imagio™ System
— The Combination of OA and US —

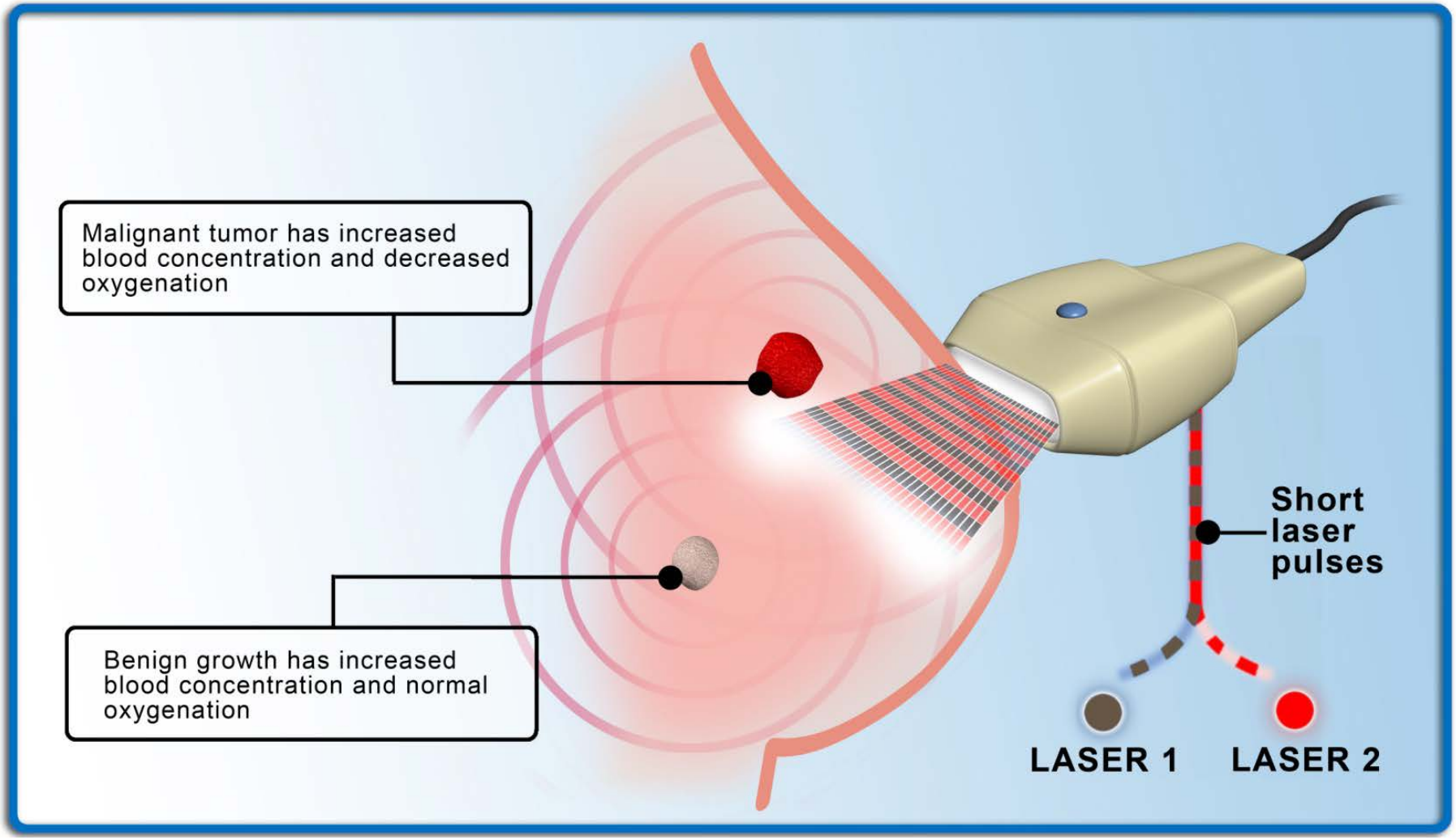
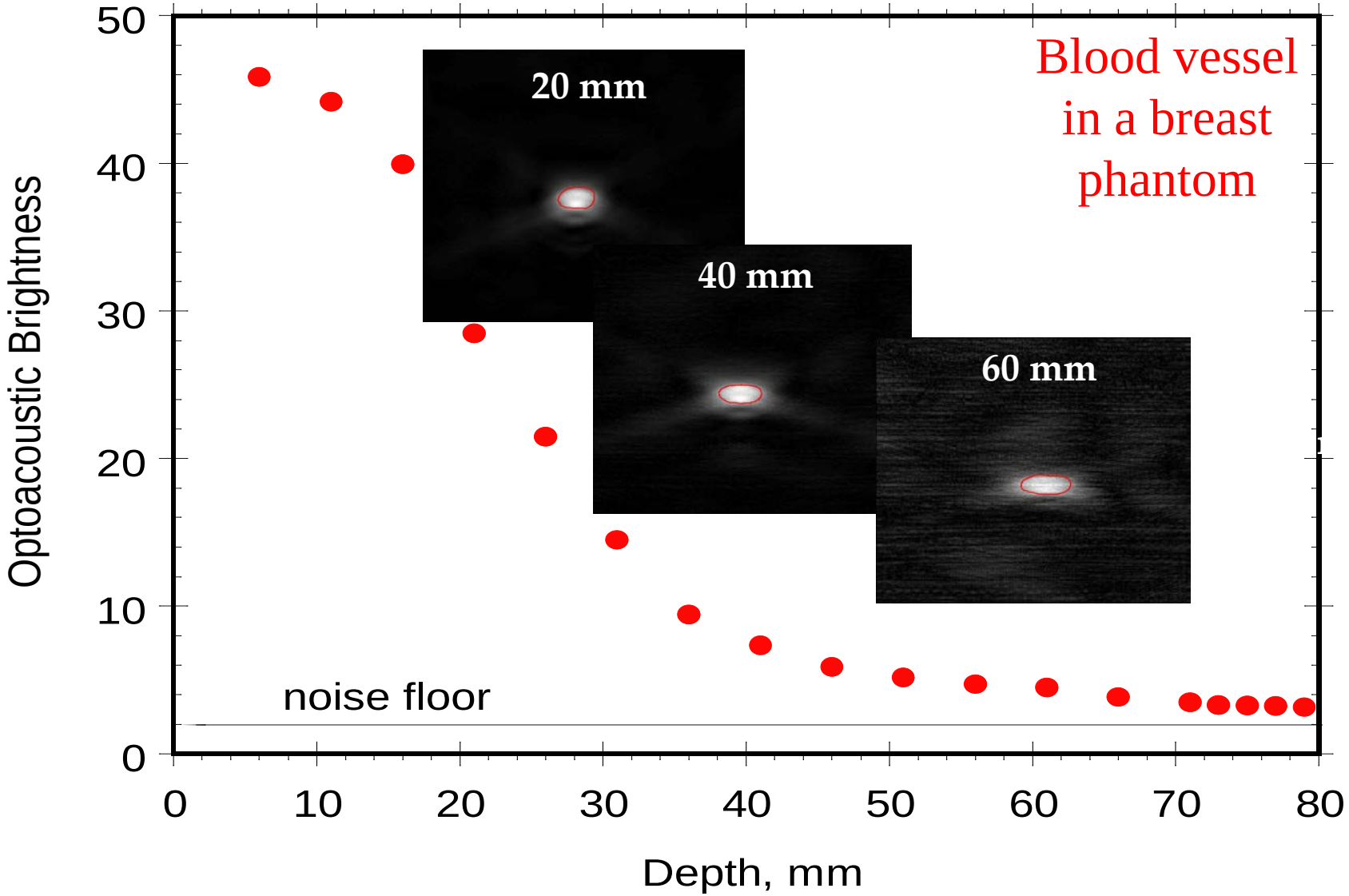
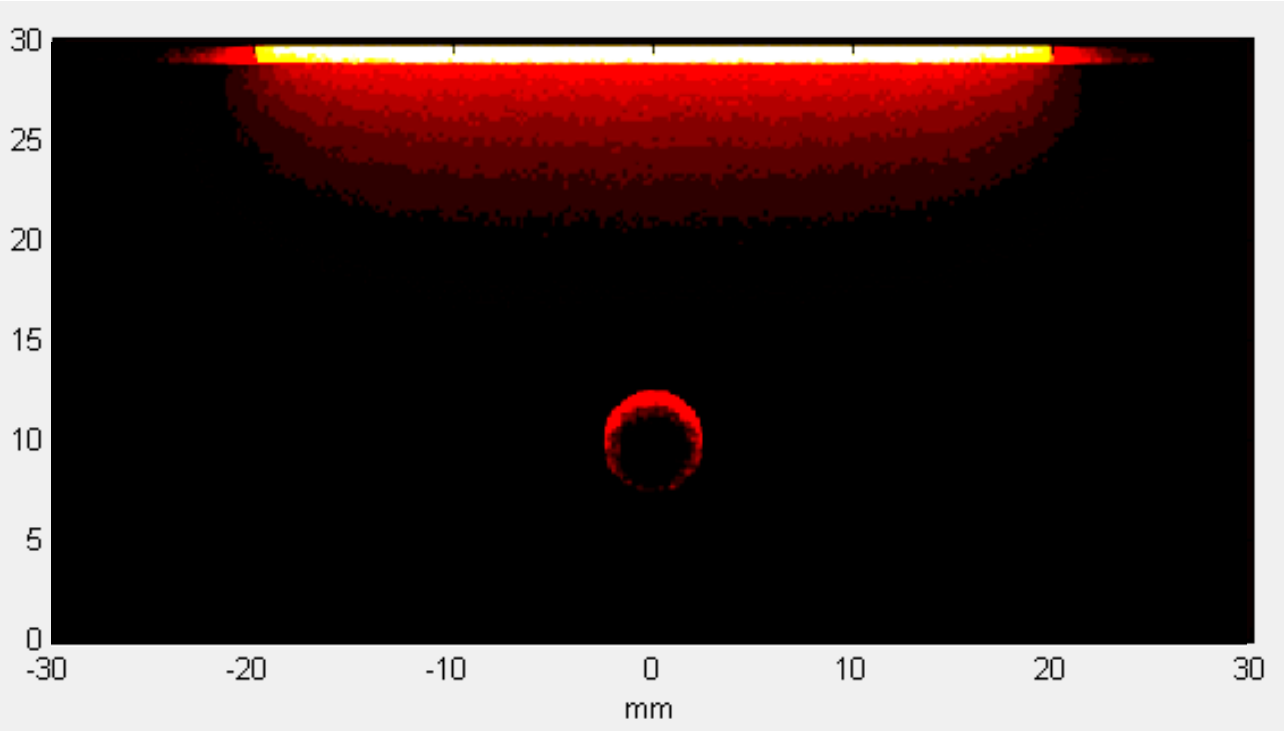


Image Contrast and Resolution *versus* Depth



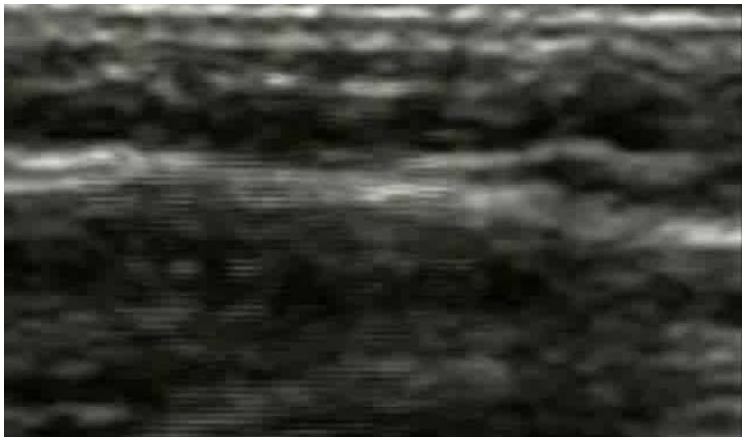
Fluence of Blood Vessel in Tissue

Blood Vessel Diameter: 5mm



Real-time Optoacoustic vs Ultrasound Imaging of Blood Vessels

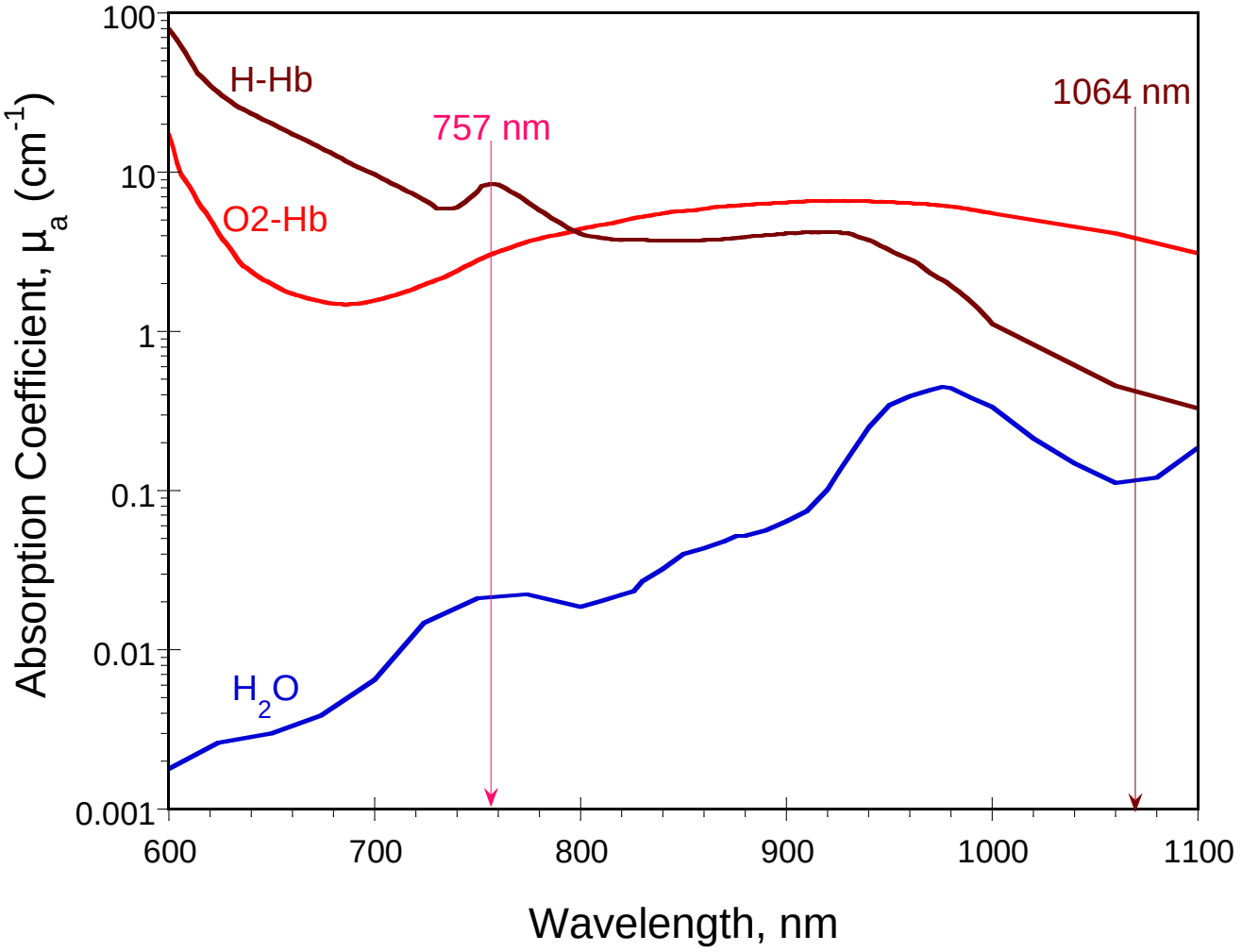
Ulnar Artery and a vein in Human



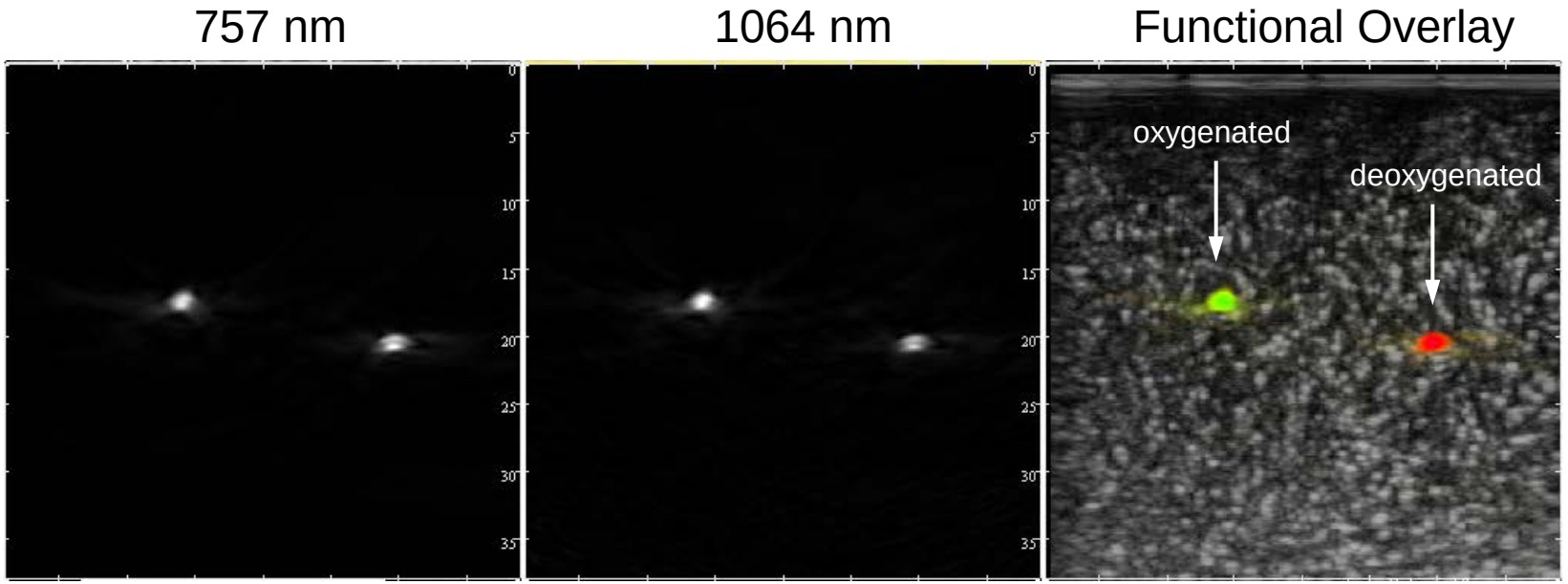
Opto-acoustic image provides high contrast of blood

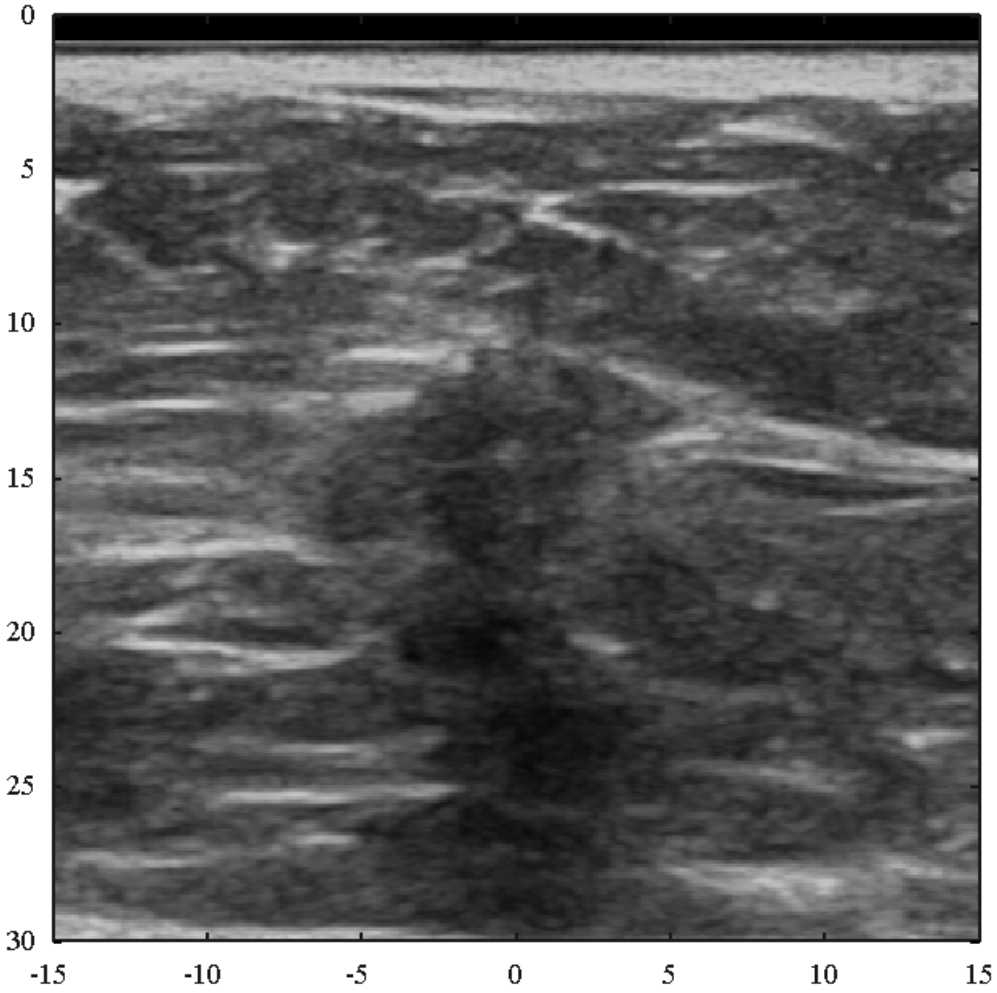
Ultrasonic Image provides high contrast of tissue morphology

Optical Absorption of Tissue as a Function of Laser Wavelength



Imaging Calibration Phantom

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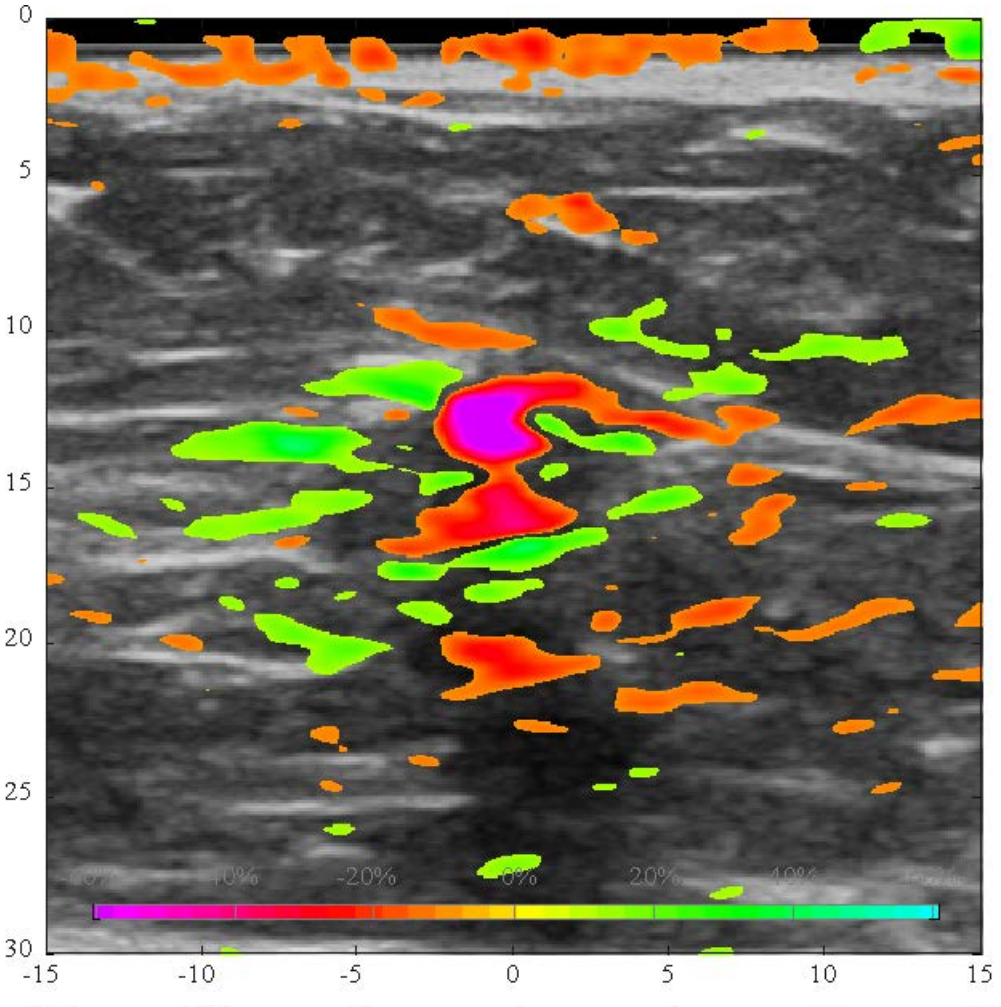
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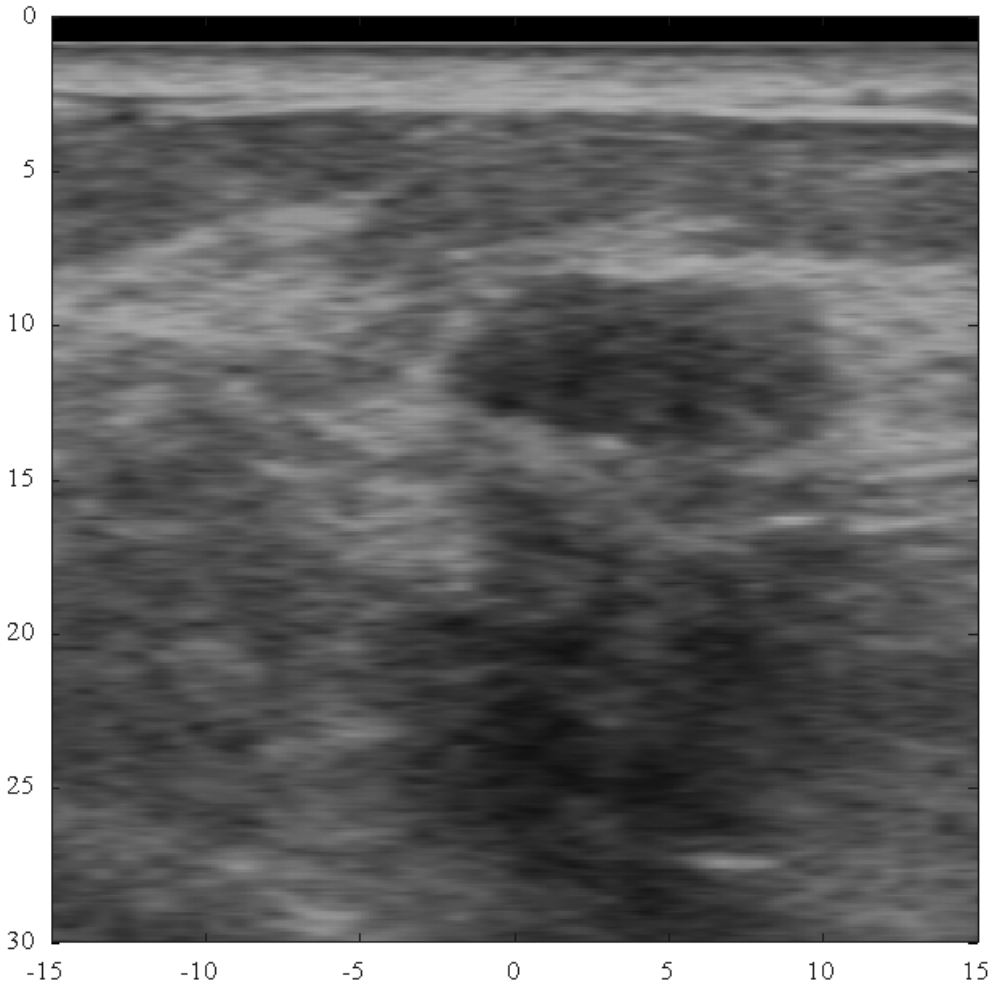
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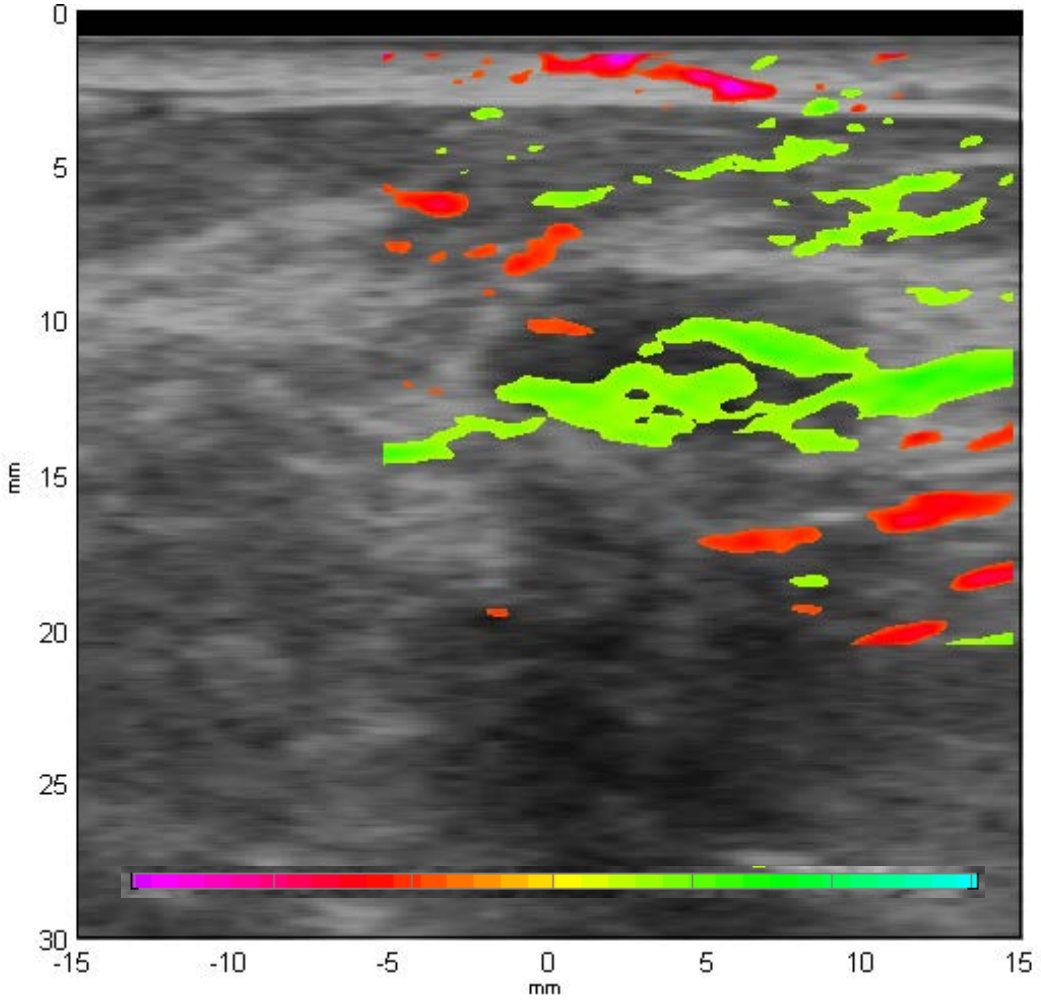
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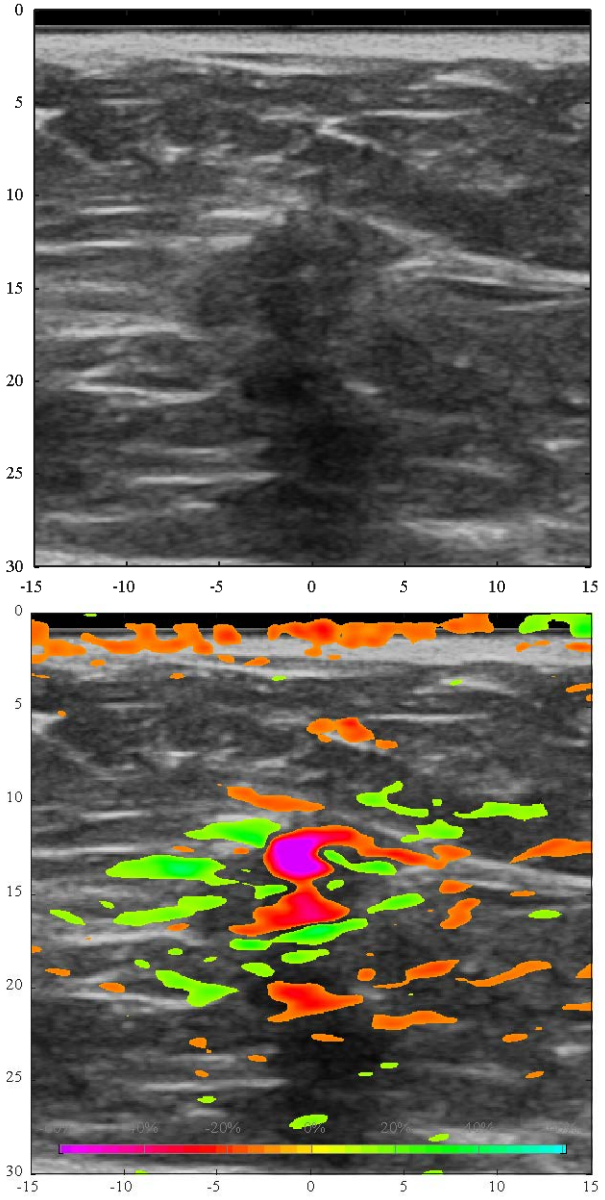
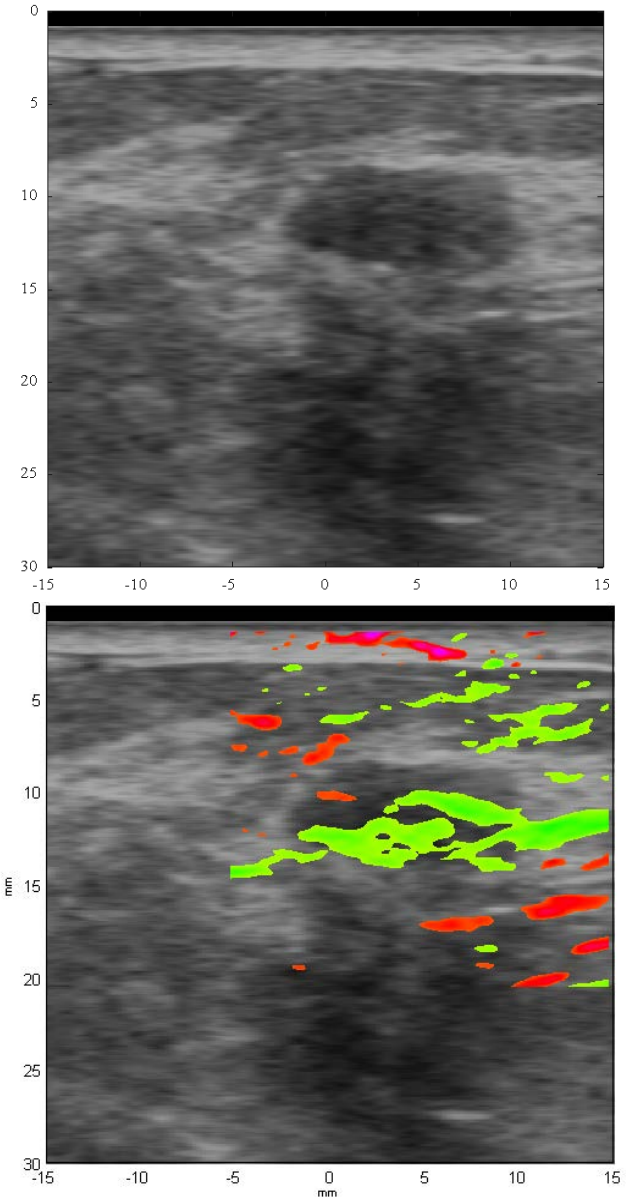
Invasive Ductal Carcinoma



Fibroadenoma



Summary

- Other types of optical imaging provides high contrast BUT low resolution in deep tissue
- Ultrasound provides high resolution and tissue morphology, BUT low contrast for blood
- Optoacoustic imaging provides high contrast with molecular specificity, quantitative information and high resolution in the depth of tissue

Questions ?