



VISUALSONICS

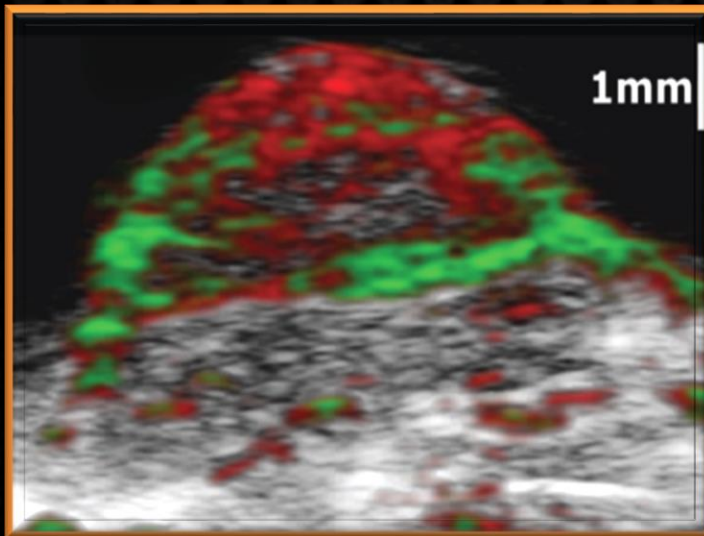
Molecular Imaging *in vivo*



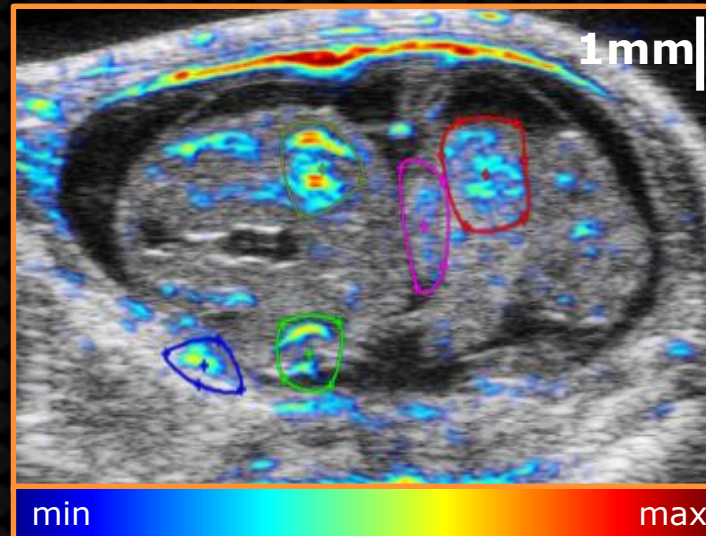
Vevo
Imaging
Platforms

Study clinically translatable

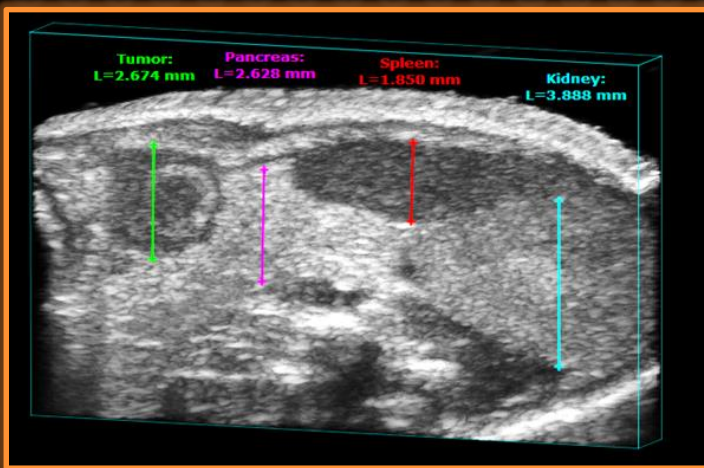
Biomarkers



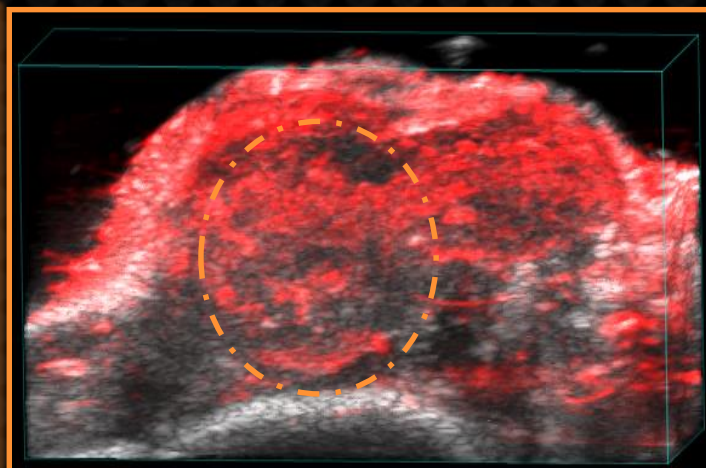
PA agents



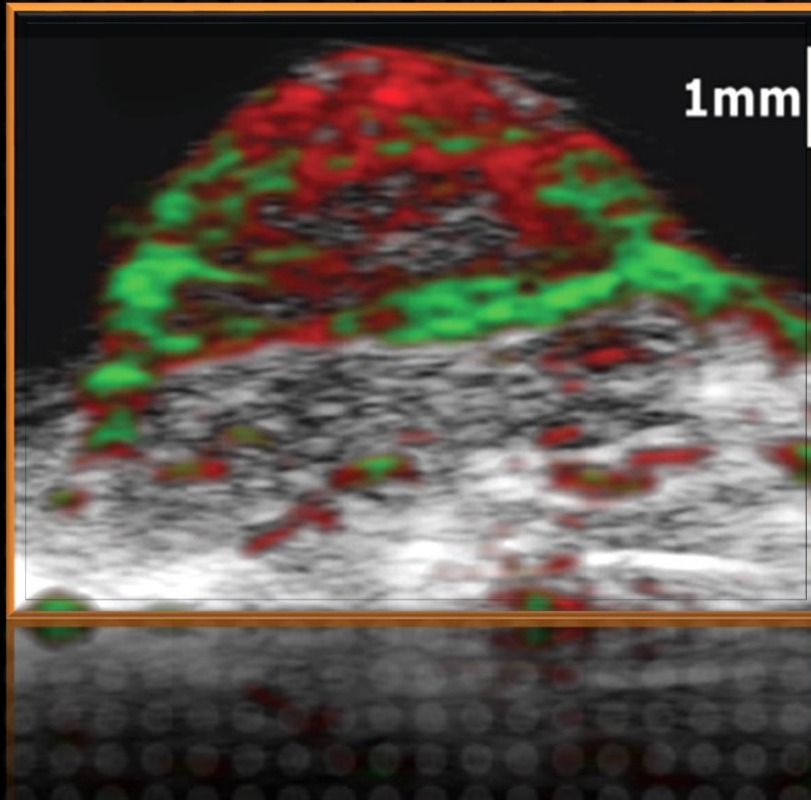
Visualize & Quantify



Models



Therapy



**Study Clinically
Translatable Biomarkers**

Imaging Translatable Biomarkers

Molecular Markers	Cell Types	Contrast Agent	
Human CD276	Ovarian Cancer	MicroMarker (Part # VS-11915)	Clinical Targets
Human BR55 (kinase domain)	Colon Cancer	MicroMarker (Part # VS-11915)	
Matrix metallo-proteases (MMP)	Myocardial infarct	MicroMarker (Part # VS-11915)	Matrix Markers
	Metastasis marker	Fluorescent-activatable (Alexa fluor)	
Integrin	Endothelial cells	MicroMarker (Part # VS-11915)	Adhesion Markers
Integrin	Tumor cells	IR800 CW* /SWCNTs**	
VCAM	Cell adhesion	SWCNTs**	
EGFR	Metastatic cells	Gold Nanorods (Nanopartz Inc.)	Receptors
VEGFR2	Endothelial cell in angiogenesis	MicroMarker (Part # VS-11915)	
P-Selectin	Endothelial cell in inflammation	MicroMarker (Part # VS-11915)	Immune Markers
MAdCAM-1	Immune cell in inflammation	MicroMarker (Part # VS-11915)	
CD44	Immune cell or Tumor cell	SWCNTs**	

Non radioactive

Real Time

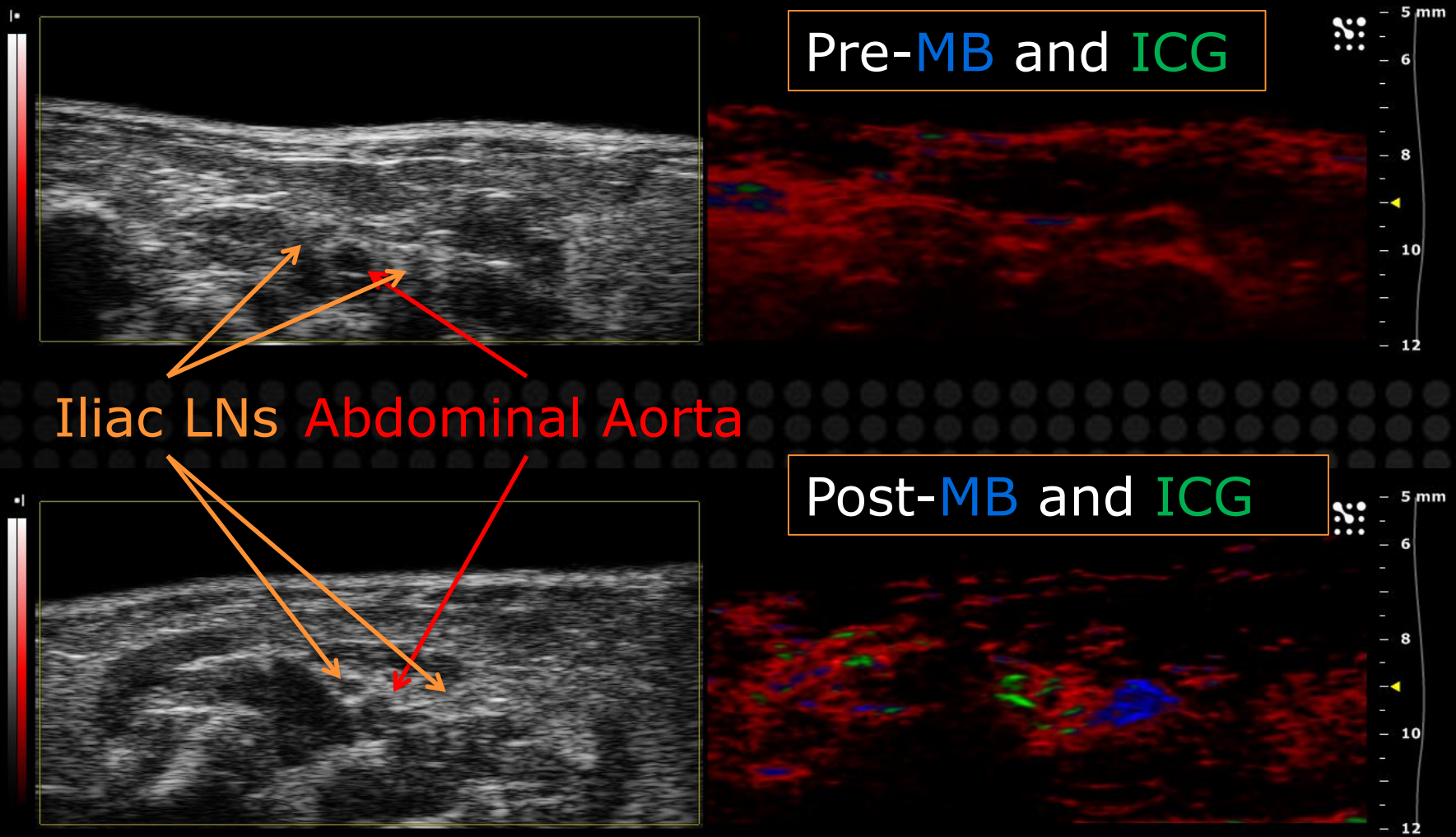
In vivo

For a complete list, view
the Molecular Imaging
Bibliography under
Journal References
section on website

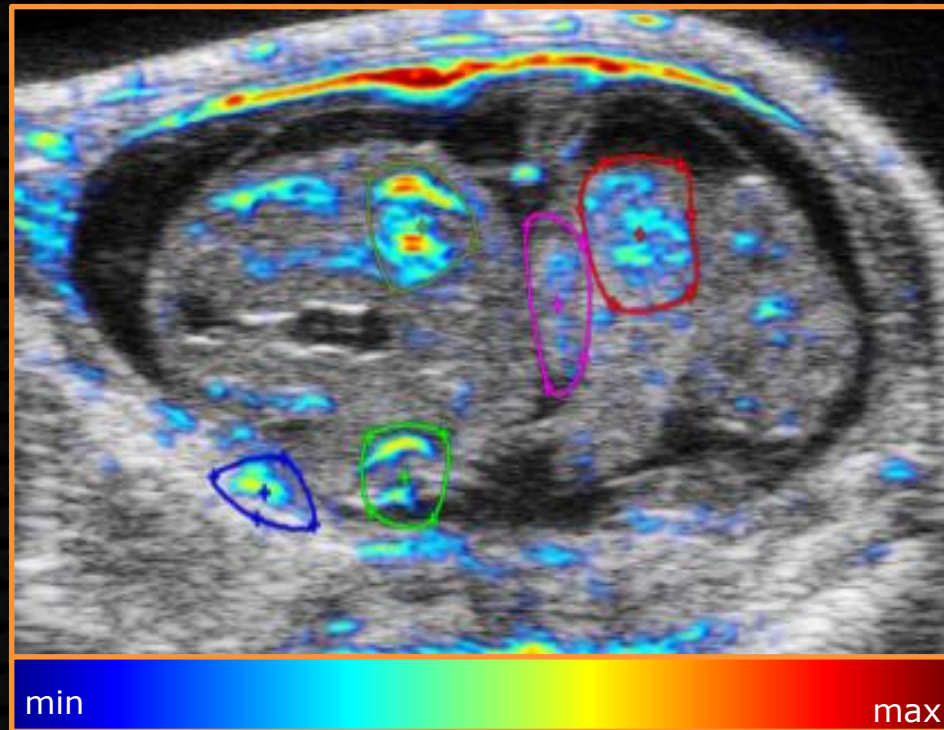
*http://www.licor.com/clinical_translation/irdye_800CW_background.html

**SWCNTs - Single walled carbon nontubes

Multiple targets, One scan



Learn about Multiplexing on the Vevo LAZR

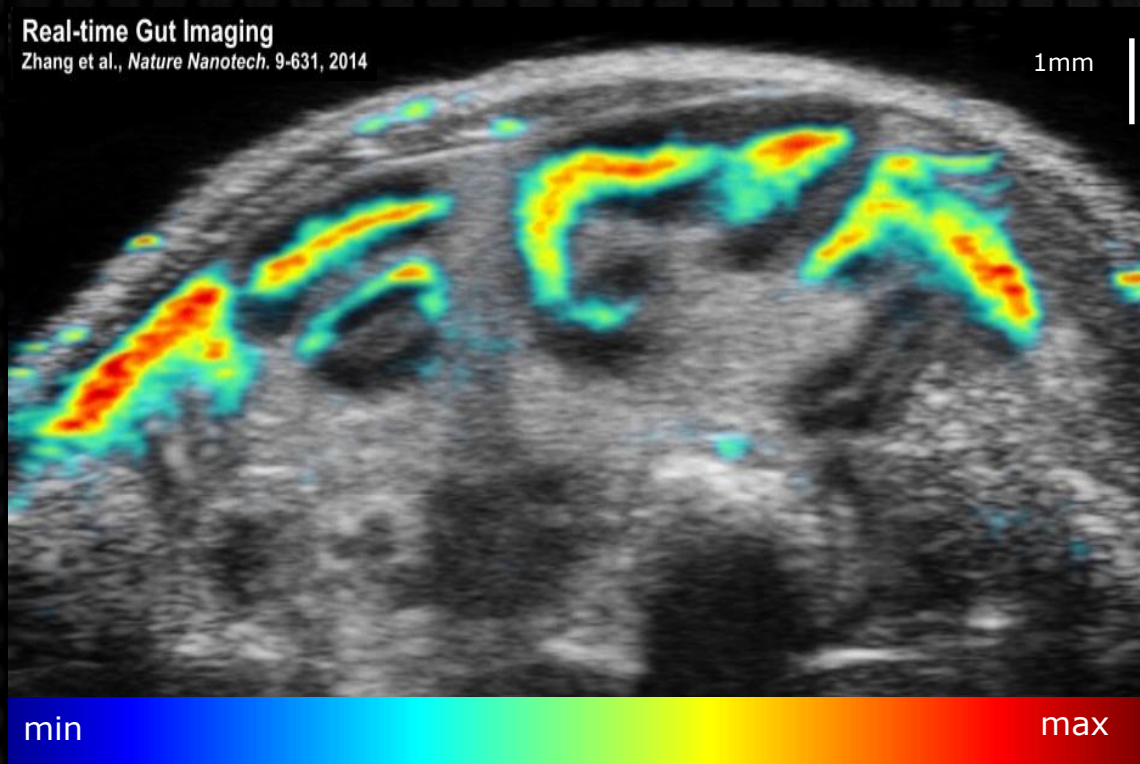


Photoacoustic Contrast agents

PACKAGED NANOPARTICLES

Real-time Gut Imaging

Zhang et al., *Nature Nanotech.* 9-631, 2014



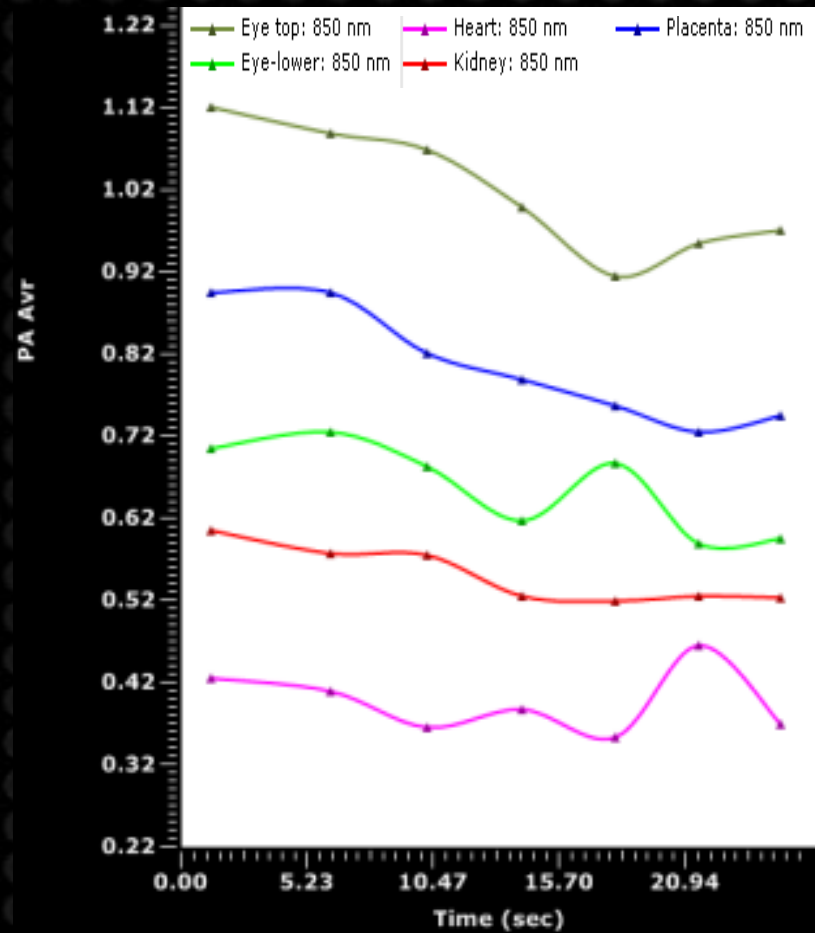
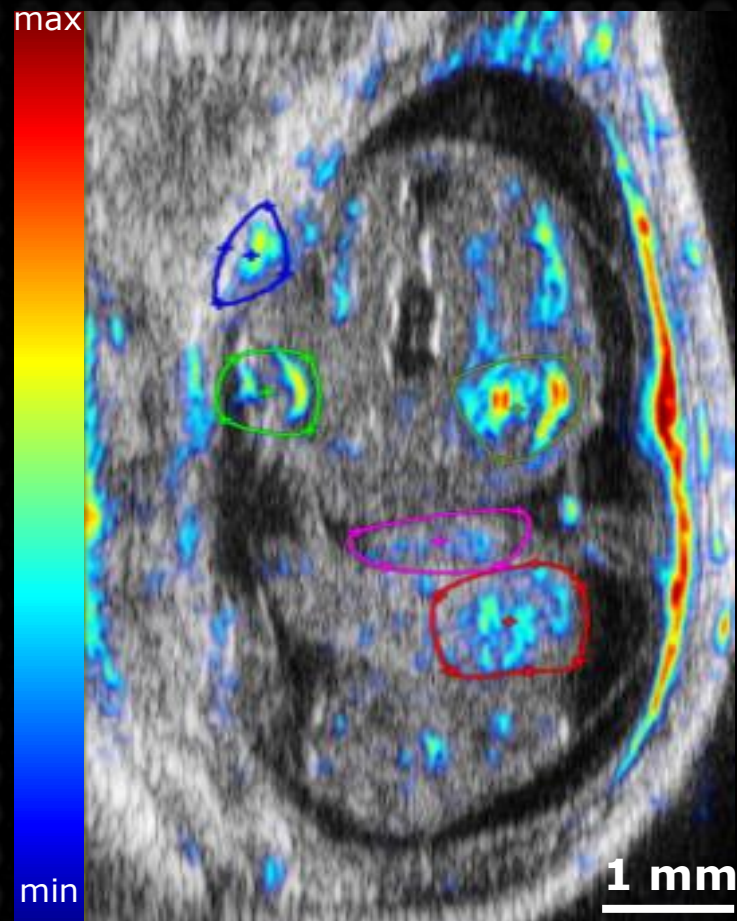
Intestinal Imaging Using Nanonaps

Mouse gavaged with 100 ODs of 860 nm nanonaps.

Imaged non-invasively under anesthesia.
Transverse plane aquired.

5 fps frame rate using a Vevo LAZR.
Seamless photoacoustic (color)
and ultrasound (grey) co-registration.
Simultaenous ECG shown at bottom.

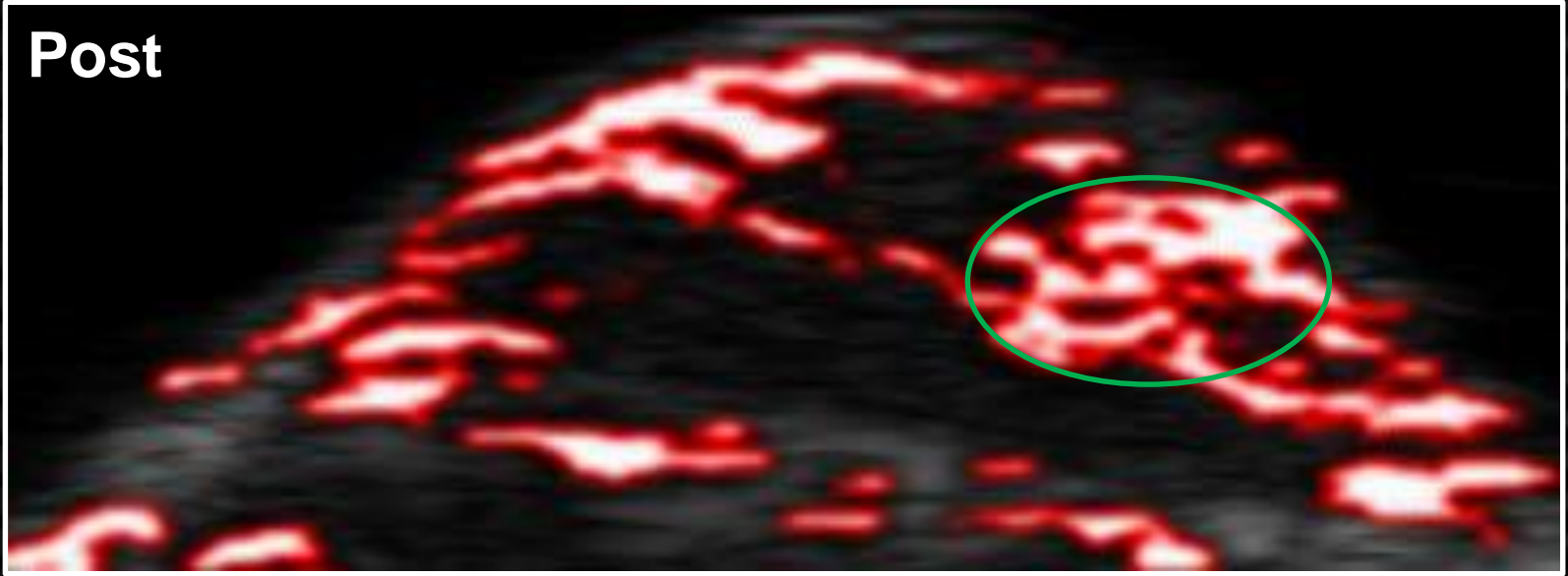
GOLD NANORODS



Biodistribution of GNR in E12 embryo

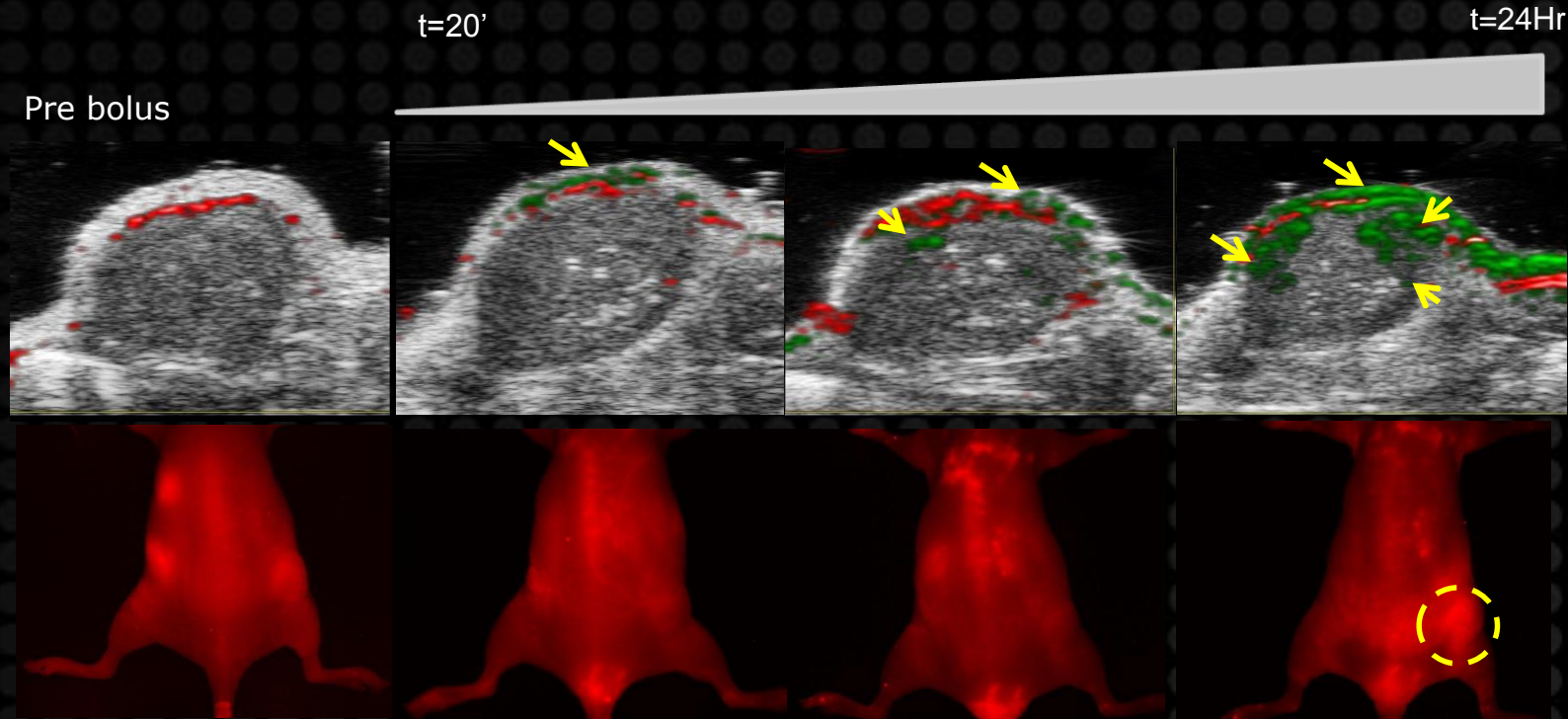
FLUORESCENT IR800 CW

Post



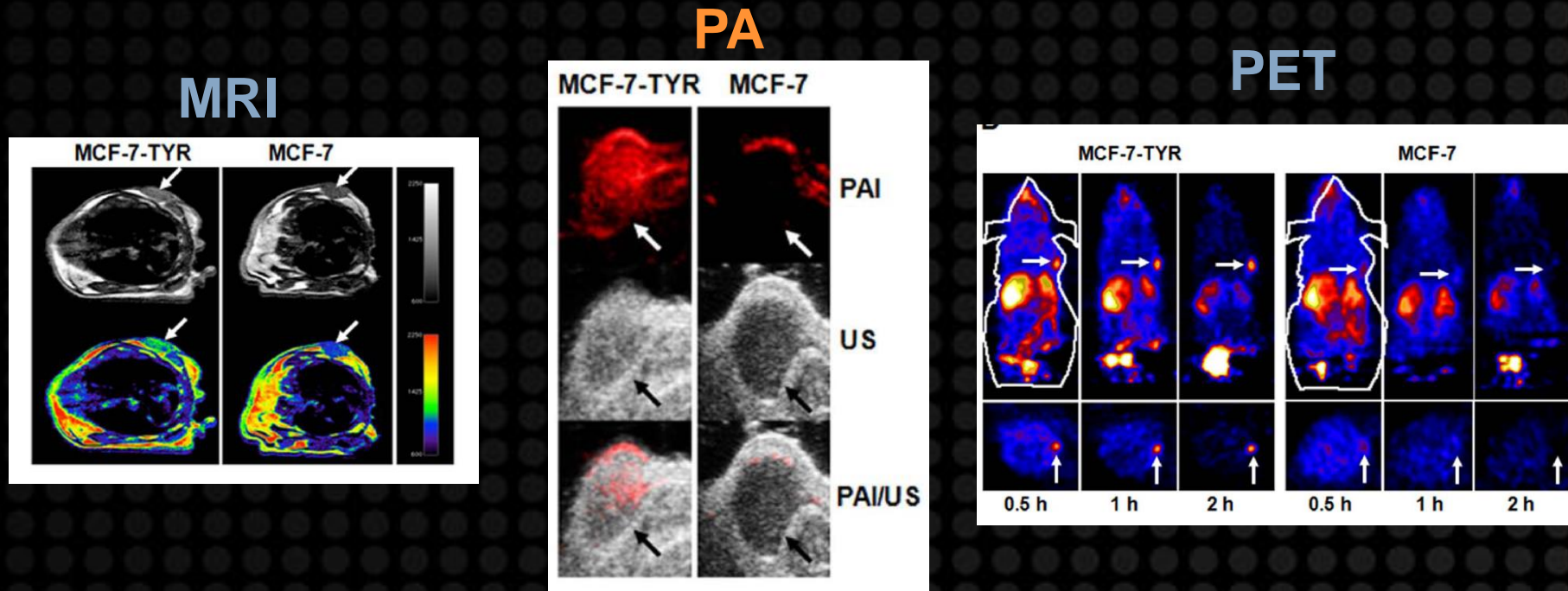
Photoacoustic imaging of IR800 for tumor metabolism

Look closer with dual modality agents

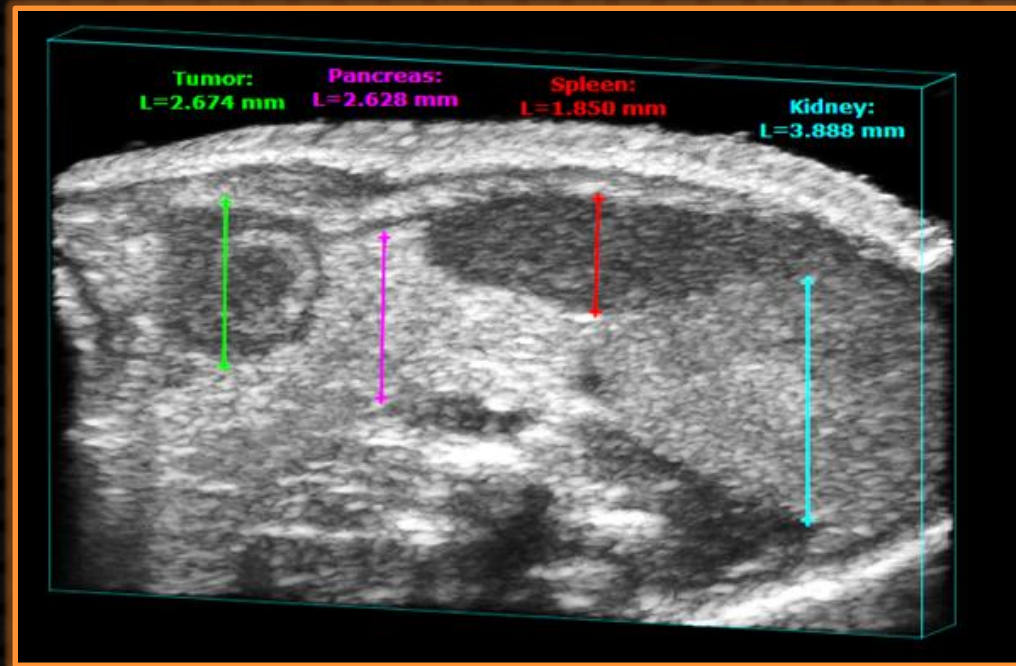


Longitudinal tracking of fluorescent pyroporphysome (120nm)

See Deeper with triple modality agent



Figures from Cheng, Z. *et al.* Tyrosinase as a multifunctional reporter gene for Photoacoustic/MRI/PET triple modality molecular imaging. [Sci Rep.](#) 2013 Mar 19;3:1490



**Study Clinically
Translatable Disease
models**

Neuropathy - Limb Ischemia

Ischemic

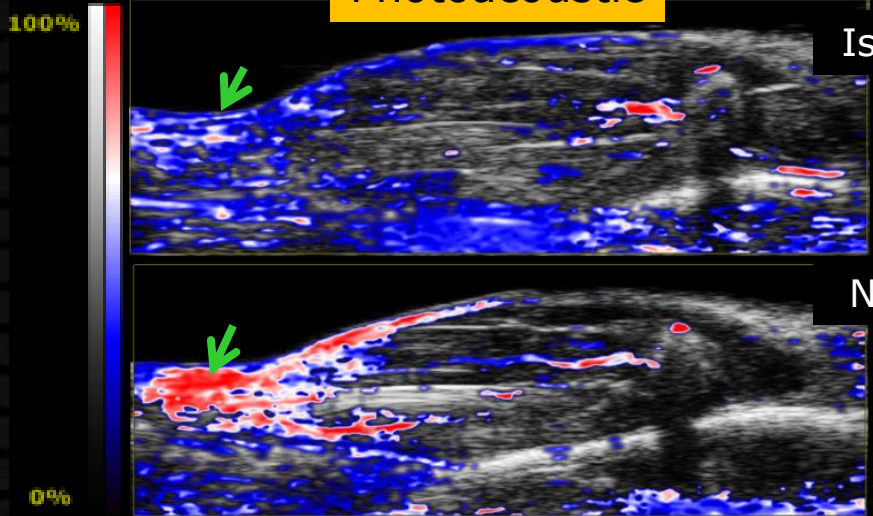
Normal



Lower Limb model:

- Surgical model and imaged post 24 hours
- Ischemia limb is not blue consistent with early detection

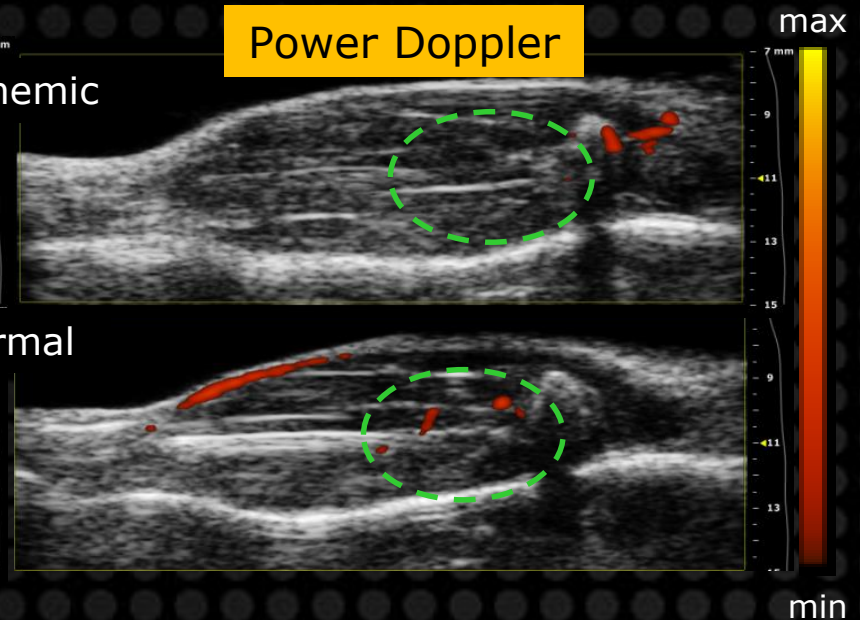
Photoacoustic



Power Doppler

Ischemic

Normal



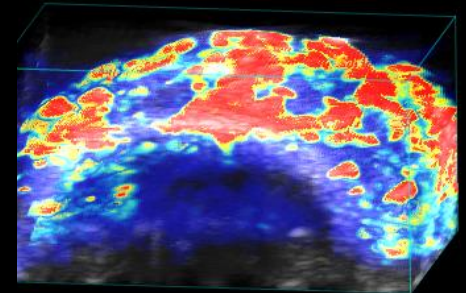
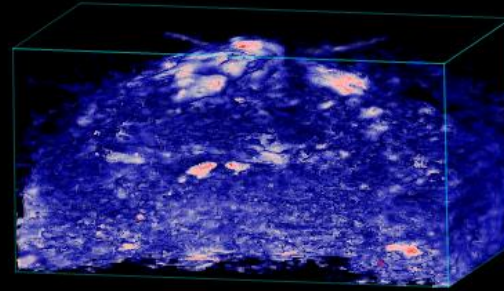
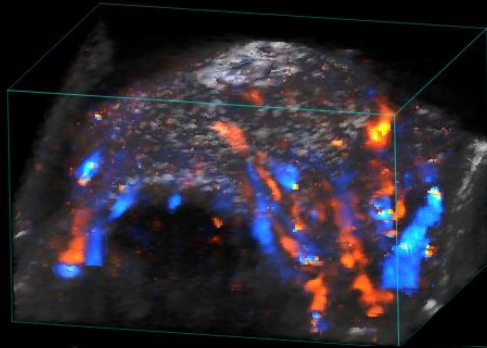
Stroke - Brain Ischemia

Color Doppler

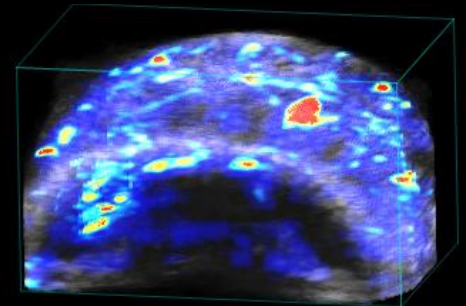
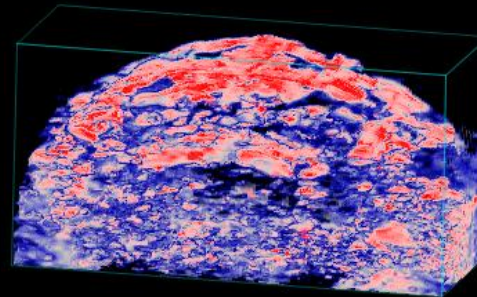
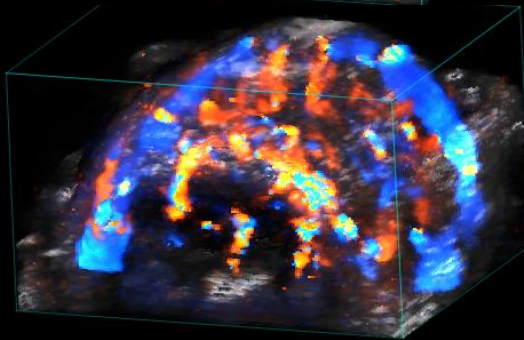
Oxygen
saturation

Total
hemoglobin

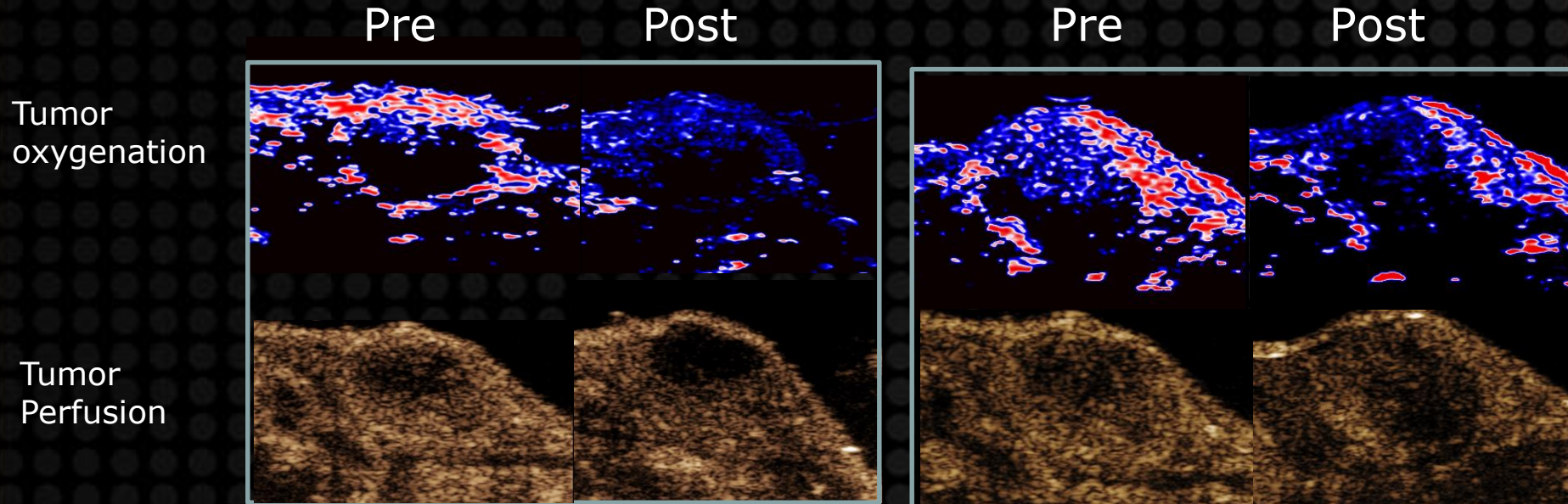
Stroke 1



Normal



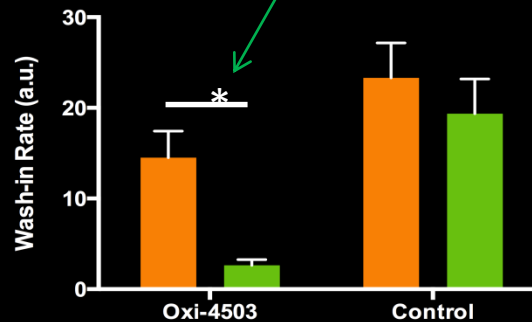
Cancer - Hypoxia



Yin, Lakshman, Foster, IEEE, 2013



Drug



Control

Pre-treatment
4hrs Post Treatment

* $P < 0.05$

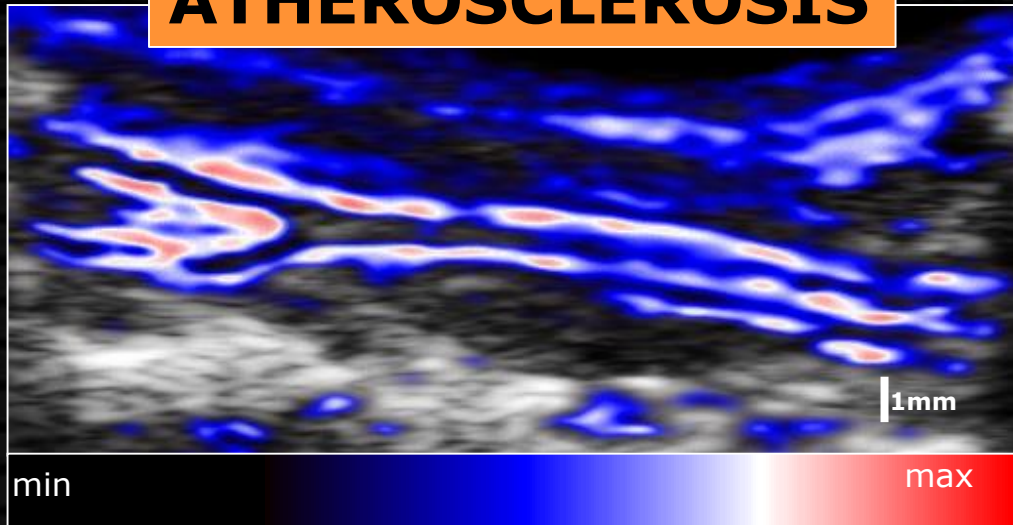
** $P < 0.005$

$N = 6/\text{group}$

Request publication on data reproducibility

Clinically Translatable Disease models

ATHEROSCLEROSIS



High Contrast

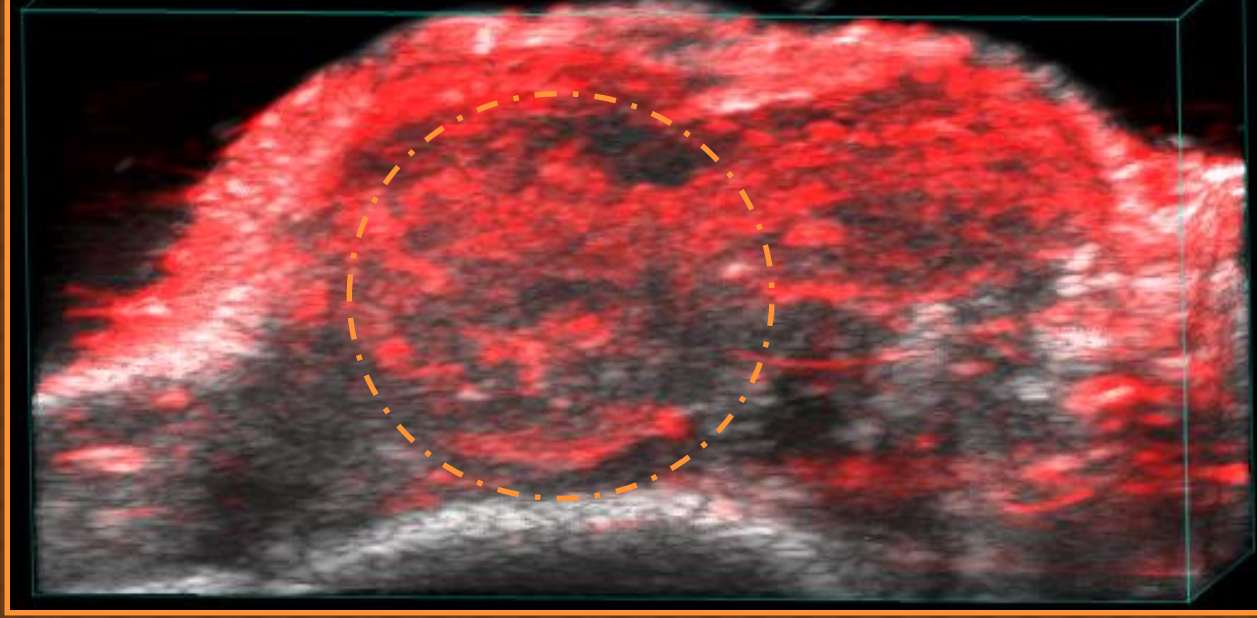
Micro-resolution

High Specificity

Non Invasive

For a complete list,
**View the
Vevo LAZR
Bibliography
under Journal
References**

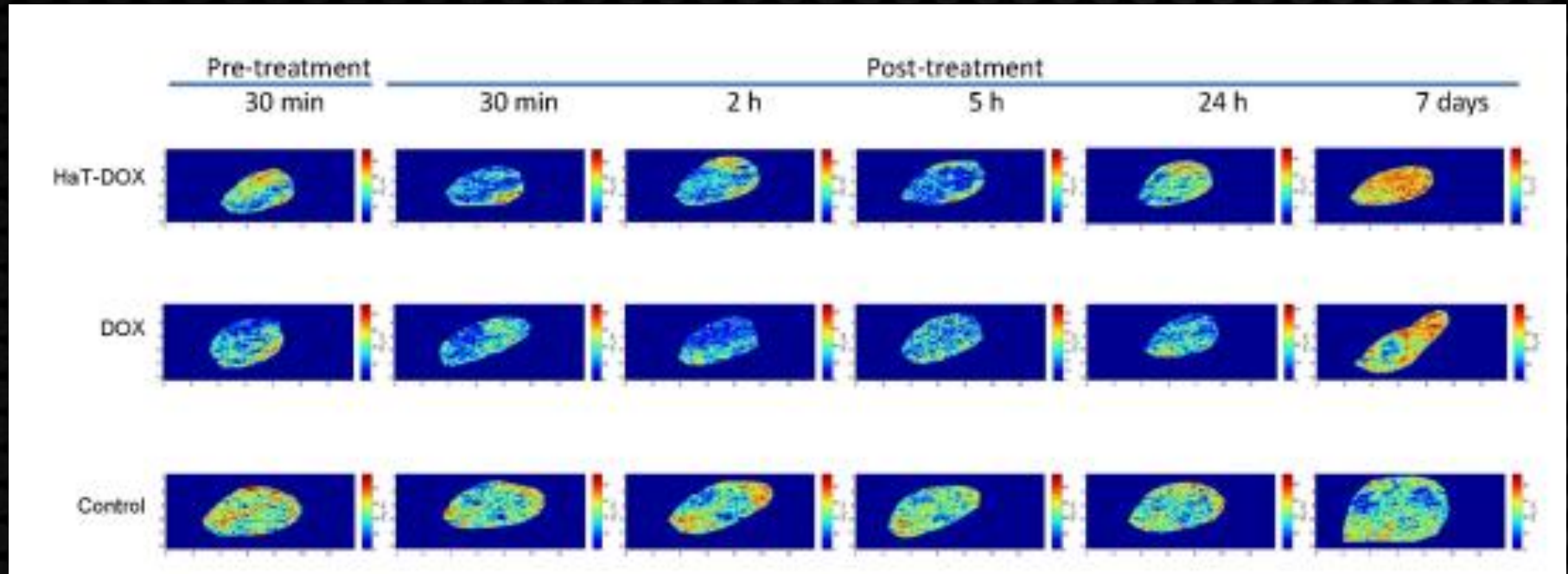
Cetuximab+PEG+GNR



Courtesy of Yonsei University, Professor Suh

**Validate Experimental
Therapies**

Anti cancer THERMAL THERAPY



Oxygen saturation images when heat was applied to thermosensitive Liposomes of Doxycycline in a subcutaneous tumor model

FDA APPROVED POLYMER SCAFFOLD

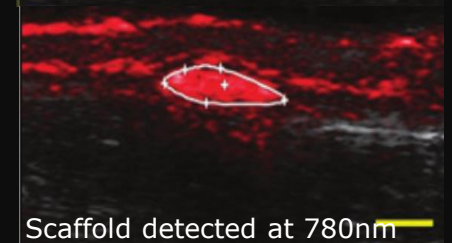
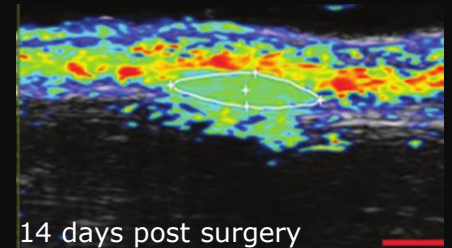
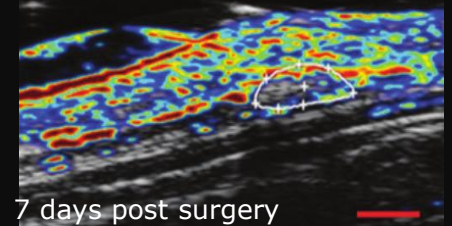
Multimodal Ultrasound-Photoacoustic Imaging of Tissue Engineering Scaffolds and Blood Oxygen Saturation In and Around the Scaffolds

Yahfi Talukdar, BE,¹ Pramod Avti, PhD,¹ John Sun, MSc,² and Balaji Sitharaman, PhD¹



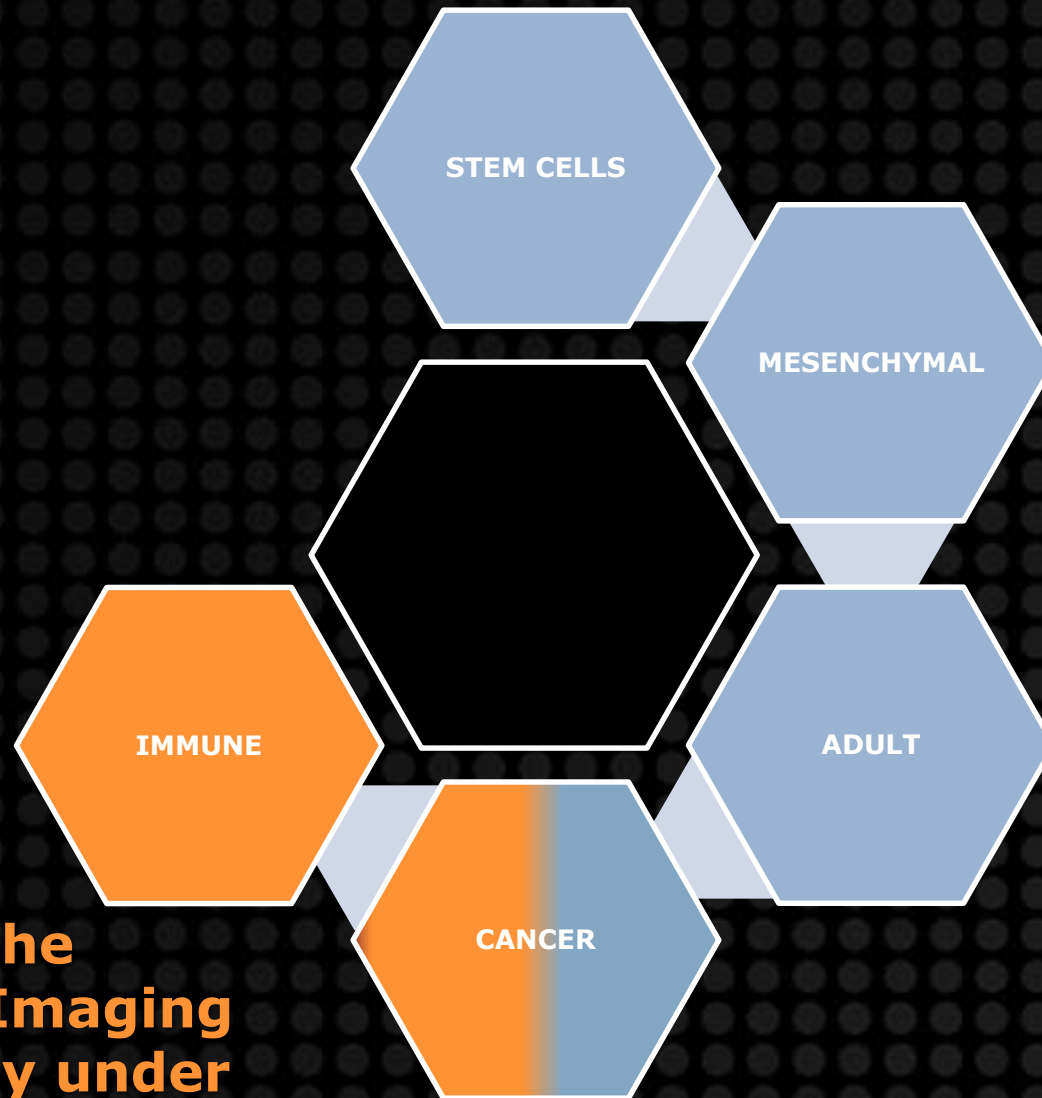
Application: Assess efficacy in Regenerative medicine

Oxygenation detected by day 14



Learn about Oxyhemo feature on the Vevo LAZR

Cell tracking *in vivo*



**Request a
LAZR
Bibliography**

**View the
Molecular Imaging
Bibliography under
Journal References**

Vevo Imaging Platforms

Visualize Multiple targets on One live scan

Screen in real time, Quantify in 3D

Look closer, see deeper with multimodal agents

Study, Validate, Commercialize

New! Vevo HD & Touch Technology



Vevo® 3100

The Ultimate Preclinical Imaging Experience



2 Vevo 3100

Introducing Vevo 3100

The World's First One-Touch Preclinical Imaging Platform

The Vevo 3100 is a new and innovative platform created for the future of imaging. It combines ultra high-frequency ultrasound imaging, quantification and education in a convenient all-in-one touchscreen platform.

Its intuitive control panel allows customizable workflow for rapid data acquisition, providing extremely high throughput when needed and saving you time! At the sweep of your hand, it responds so quickly and intelligently to your imaging needs, you'll know it was created precisely for researchers like you.

With lightweight ergonomically designed MX series transducers, imaging has never been easier and clearer. The Vevo 3100 enables you to obtain *in vivo* anatomical, functional, physiological and molecular data simultaneously, all in real-time and with a resolution down to 30 μ m.



Customizable User Interface

Easily customize the interface to suit your needs. Swipe, Drag, Tap, Pinch or Spread – optimized workflow is always at your fingertips.



Vevo HD Image Technology

This revolutionary technology reduces speckle noise and artifacts in images while preserving and enhancing critical tissue information – all in real-time.



Real-Time Learning

For instant reference, scan with onboard step-by-step imaging tutorials and guides.

TOUCH | CUSTOMIZE | VISUALIZE



NEW! VisualSonics iPACS®

The New Innovative and Collaborative Data Informatics Solution for VisualSonics Users



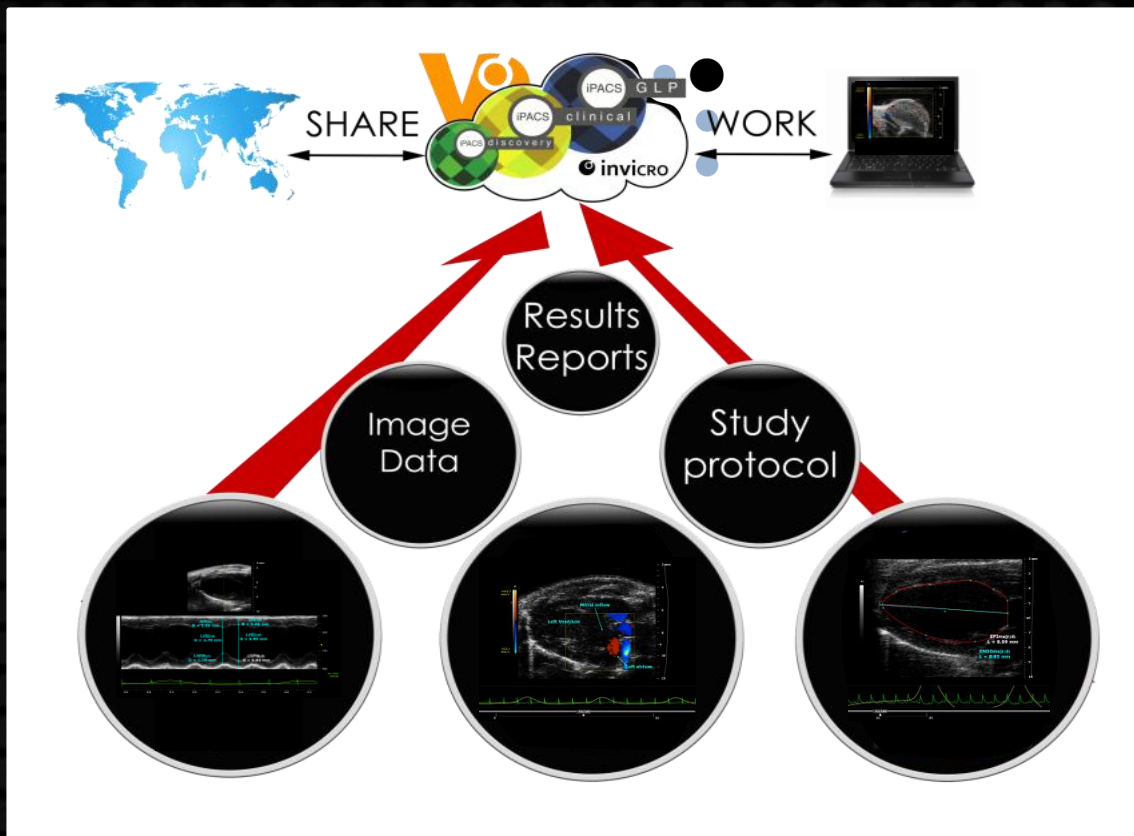
Streamline data management, mining and reporting workflows

Find data with powerful query and data mining tools

Share data with internal and external collaborators securely and in real-time

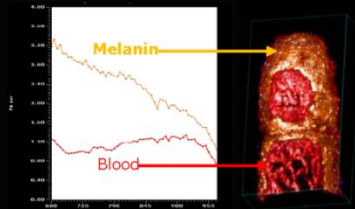
Organize and make more accessible VisualSonics Vevo® LAB image data and associated analysis data

Generate custom reports for QA/QC and presentation needs



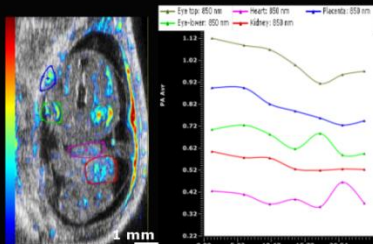
NEW! LAZR developments

MULTIPLEX & QUANTIFY



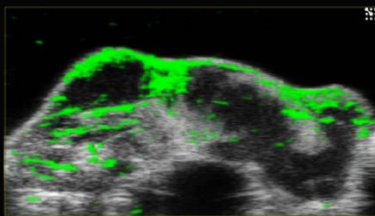
Multispectral analysis of discrete molecular targets

3D SPECTRAL UNMIXING



Biodistribution of GNR in E12 embryo

KINETIC IMAGING



Apoptosis imaging with PSVue in tumors

BACKGROUND SUBTRACTION

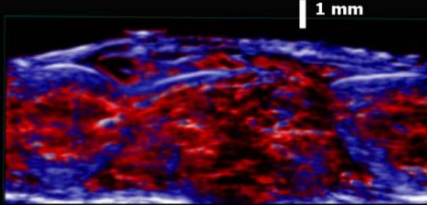
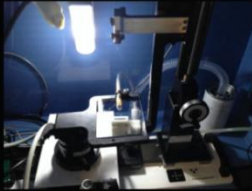
Ask for a
demo

COMING SOON!

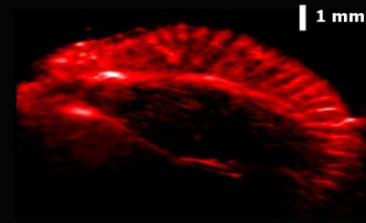
**SEE DEEPER
SEE THE DIFFERENCE**



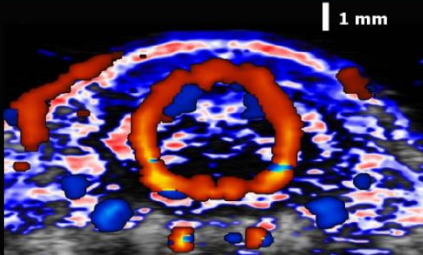
COMING SOON!



Light Coupling Stage achieves depth sensitivity



Rotational Compounding for microvascular Imaging



LZ201 for deeper imaging of Brain pathologies

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