



# Vevo can help 3Rs

Replacement

Reduction

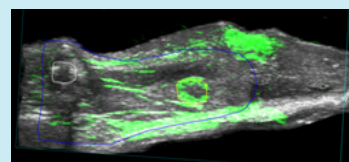
Refinement



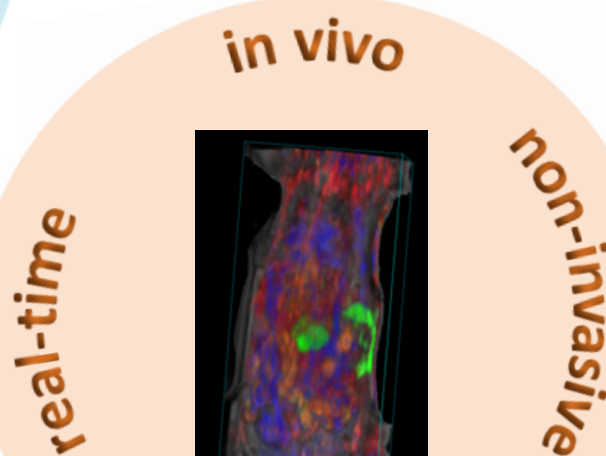
Early tumor detection



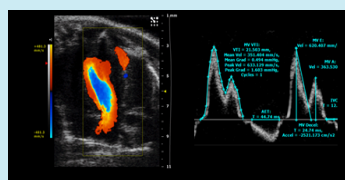
Cardiovascular toxicity studies



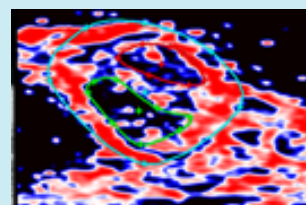
Infection imaging



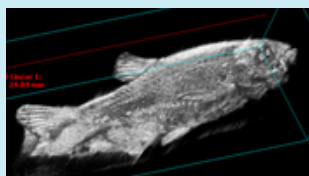
Whole body imaging



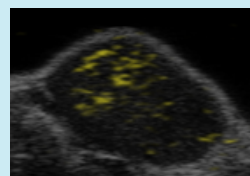
Blood flow imaging



Hypoxia Imaging



3D Zebrafish imaging

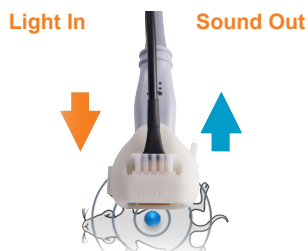


Biodistribution & Pharmacokinetics



# Multimodal molecular imaging - A novel approach with focus on Reduction and Refinement

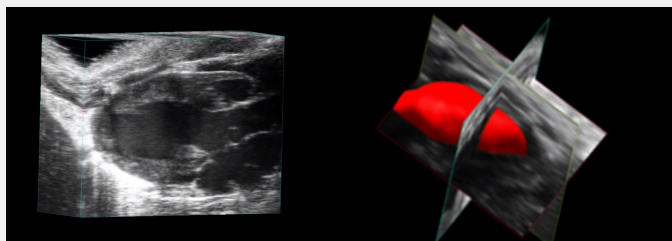
## The Vevo LAZR-X Technology



Photoacoustic imaging is a new hybrid optical-ultrasound imaging modality for the visualization of optical absorbers in vivo with high resolution in deep tissue.

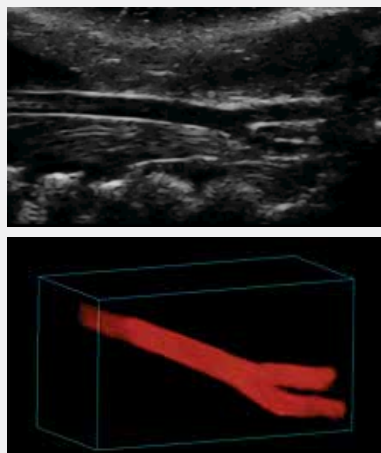
The Vevo LAZR-X imaging system combines the best of two imaging modalities: high resolution ultrasound and photoacoustic imaging. The technology enables non invasive longitudinal imaging with a focus on reduction and refinement of animal models. Applications using the system include the whole body imaging and the complete analysis of cardiac function and toxicity, hemodynamics, hypoxia and ischemia measurement, monitoring of drug delivery, progression of angiogenesis, cell tracking, and more.

## Morphology and Cardiac Structures from 2D to 4D



Visualize the geometry and dynamics of the entire heart in one acquisition without any assumptions. Extract volumetric measurements across all time-points in the cardiac cycle.

## Vascular Imaging



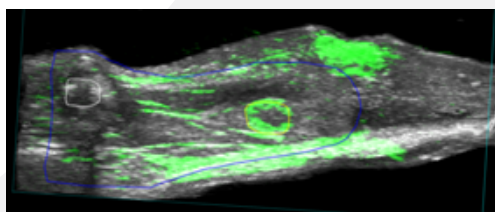
High resolution imaging with ultra high-frequency ultrasound is fundamental to analysis of small structures such as carotid arteries or precise quantification of the Intima Media Thickness (IMT) in small vessels.

## Seeing More Matters

Visit [visualsonics.com](http://visualsonics.com) to learn more

## Infection Imaging

Hybrid imaging of photoacoustic and ultrasound is used as a diagnostic tool for the prosthetic joint infection (PJI). In the study, we have imaged the Staphylococcus aureus PJI, conjugated with fluorescent indocyanine green (ICG) which was injected intravenously for 1 week postoperatively. The obtained images were also compared with the fluorescent imaging.

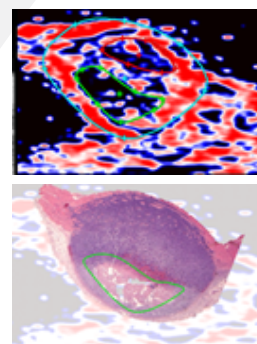
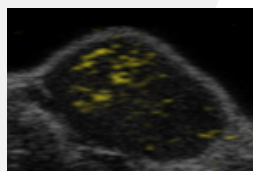


## Multimodality imaging of Tumor Angiogenesis



Early detection of tumor with ultrasound imaging

Hypoxia imaging with photoacoustics and the validation with histology



Nanoparticle detection and pharmacokinetics analysis.

Vevo LAZR-X technology - the world's first complete solution for in vivo pre-clinical imaging to make a significant contribution to 3Rs impact.

Terri Swanson from Pfizer shares the following in her webinar:

**"Ultrasound plays a vital role in the drug development process, longitudinal data acquisition can reduce number of animals required per study"**

