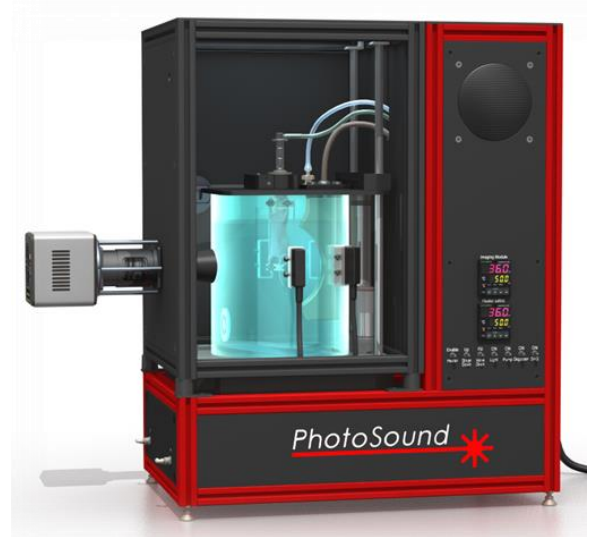
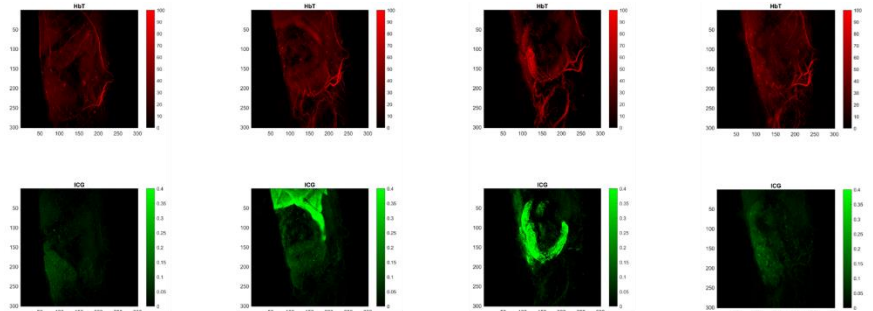


TriTom – a small animal 3D imaging platform for quantitative whole-body mapping of light-absorbing biomolecules and contrast agents

- What is TriTom?
 - TriTom is a preclinical imaging technology that employs 3D photoacoustic tomography as a primary modality enabling high-resolution imaging and quantitative assessment of light-absorbing biomolecules and contrast agents deep inside the interrogated object.
- Which areas of biomedical research are currently using TriTom?
 - Development of novel Optical and Fluorescent Contrast Agents and Biomarkers, Cancer, Tissue Engineering and Regeneration, and Developmental Biology.
- Is TriTom a multimodality imaging system?
 - Yes. TriTom Premium model integrates photoacoustics and fluorescence producing multimodality images which are co-registered in time and space.

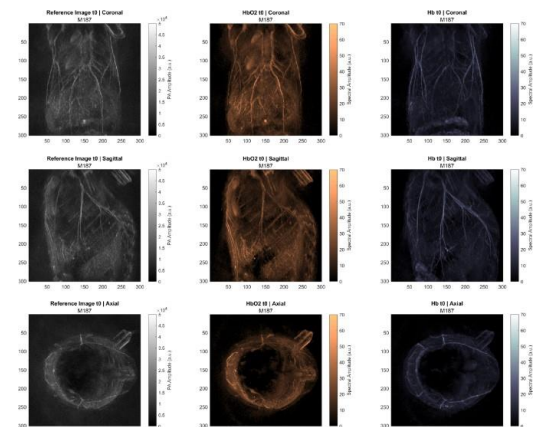


- Which contrast agents are visualized by TriTom?
 - Nanoparticles, molecular probes, and dyes absorbing light in 460 – 1320 nm spectral range.
 - Fluorescent proteins and molecular probes with excitation between 460 nm and 800 nm.

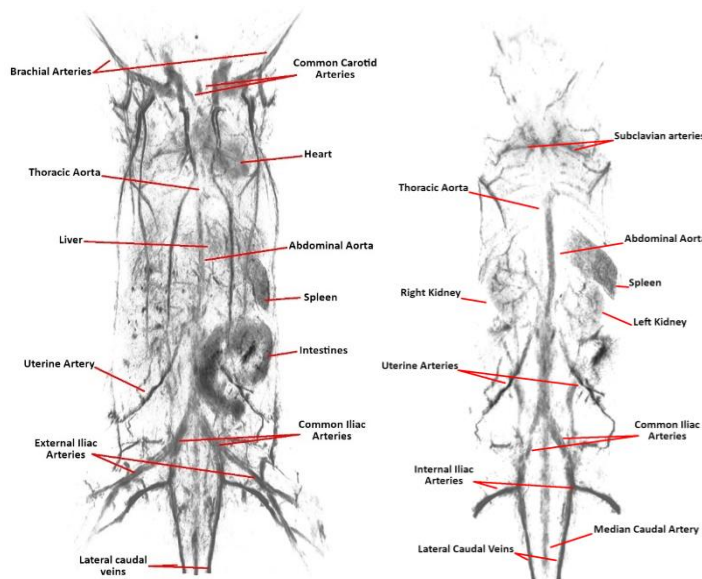


- Which biomolecules are visualized by TriTom without a contrast agent?
 - Oxyhemoglobin, deoxyhemoglobin, and melanin.
- Which objects can I study with TriTom?
 - Live mice and rats (< 200 g).
 - Tissue samples, tissue-mimicking phantoms, liquid samples inside 50 µl microcuvettes.

- What are the typical *in vivo* TriTom images?
 - A series of 3D parametric maps of the studied light-absorbing contrast agents, molecular probes, and/or endogenous biomolecules registered to 3D anatomy (high-resolution blood circulatory system, internal organs, and skin).



- What is the size of ROI that I can study using TriTom images?
 - Single-scan 3D images are scaled by user from 0.001 cm³ to 75 cm³.
 - Whole-body mouse images are reconstructed from 3-4 single scans.
- What is the imaging depth on TriTom images?
 - 20-40 mm without degradation of spatial resolution.
- What is the spatial resolution of TriTom images?
 - 0.15 mm x 0.15 mm x 0.42 mm, independent of the image size and depth inside the object.
- How fast is TriTom imaging?
 - 10 seconds for a 3D scan of a local ROI.
 - 36 seconds for a large-scale (75 cm³) 3D scan.
- Can TriTom be used to visualize multiple biomolecules and contrast agents in a single scan?
 - Yes. The multiwavelength excitation sequences allow for spectral unmixing of multiple optical absorbers.
- Can a user design excitation sequences, which are optimal for their new contrast agent?
 - Yes. Each scan can use any number and order of individual excitation wavelengths, switchable at a 20 Hz rate.
- Does TriTom use ionizing radiation?
 - No. A pulsed laser is used as an excitation source.
- How can TriTom benefit my research?
 - TriTom is a state-of-the-art preclinical imaging instrument, which provides stunning 3D anatomical visuals and accurately mapped data for longitudinal quantitative assessment of biodistribution, molecular targeting, vascular morphology and density, blood oxygenation, ischemia, tumor progression and detection of metastasis, monitoring effects of drugs and therapies, and more.



TriTom Observation

t = 0h

t = 3h

t = 24h

