Development of non-invasive in vivo imaging dedicated to small animal model

New applications fields:
1) Diagnostic imaging
2) Improved pathology monitoring
3) Biomedical research
4) Development of new therapeutic drugs

Treatment effectiveness and translational biomedical research
Better results predictability, accelerate the transition to new clinical therapies

Allows longitudinal analysis and avoids euthanasia of large animal models (Reduction of the 3R rule)

Transillumination of iodinated contrast material and X-rays guided injection by light absorption and fluorescent imaging.

VevoLAZR® (Visual Sonics) - Ultrasound and Photoacoustic imaging

Ultrasound imaging applications:
- Organ and tumor imaging (2D)
- Biology happens in real time
- Growing tumors
- Nephrology, Hepatology, Rheumatology
- Vascular flow (Doppler)
- Cardiac function
- Ultrasound guided injection
- Interventional procedures
- Translational research

Contrast imaging functionality:
- Perfusion analysis using destruction and reperfusion quantification
- Biomarker quantification tools when using bubble targeted therapy

Photoacoustic imaging:
- Quantification of oxygen saturation and hemoglobin count
- Oxygen distribution measurements in the tumor real mapping
- Evaluation stages of tumors
- Melanoma and other skin cancers
- Identification of lymphatic vessels and sentinel lymph nodes
- Nanoparticles, contrast agent imaging
- Microdistribution of biomarkers
- Generating absorption spectra

Quantum FX® (Perkin Elmer) - Preclinical μCT

- X-ray based high resolution imaging modality
- Revolution arm (360°) acquire full 3D data
- Detector: convert absorbed X-rays into visible light photons
- Anatomical imaging: tissues, organs and whole organisms
- Characterization of disease progression

- Lung tumoral imaging
- Bone tumor imaging
- Contrast agents for blood vessel and tumor imaging

FMT4000® (Perkin Elmer) - Fluorescence Molecular Tomography

- 3D fluorescence tomographic imaging in infrared
- Quantification of deep tissue targets in vivo
- Using activated targets and/or vascular agents and labels
- Quantification of biological processes
- Immune and tumor cells localization
- Targeting membrane transport
- Modulation of treatment and activity
- Measurement of metabolic activity

- Examples of Perkin Elmer applications:
- Testing and imaging its own fluorescent agents:
- In Vivo imaging with FMT and Neutrophil Elastase 680-fast® on mammary a) and intestinal b) tumor in nude mice
- In Vivo imaging with FMT and Neutrophil Elastase 680-fast® on mammary (a) and intestinal (b) tumor in nude mice

Night OWL – Bioluminescent imaging

- Powerful approach using animals/cells with genetic modifications
- Luciferase reporter systems
- Tumor cells or bacteria location

Photoacoustic imaging:
- Anatomical imaging:
- Oxygen function in Fluorescence Molecular Tomography
- Time bolus µbubble 5 mm
- Lung tumoral imaging 1 mm
- Melanoma 2 mm
- Tumors 2 mm
- 2D Biomarker Imaging
- Frequency: 21 and 30 MHz

Image 15x3177 to 248x3346

Image 24x41 to 186x135