# IN VIVO IMAGING

## A great variety of complementary imaging modalities

Thanks to dramatic advances in equipment, detectors and imaging probes, there has been an increasing availability of *in vivo* imaging modalities to detect biological processes in preclinical models, especially in mice and rats, with great sensitivity and high resolution. One of the main advantages of *in vivo* imaging is the possibility to monitor repetitively and non invasively the evolution of a phenomenon in the same animal, over time. **Imaging sets up as a unique tool for translational research** and exhibit a high potential to accelerate the understanding of disease and help to select drug candidates for pharmaceutical development**.**

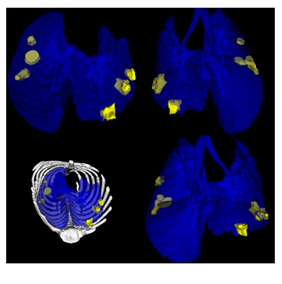
## ANATOMICAL IMAGING

### X-ray imaging

- Bone structure, bone mineral density (DEXA analysis)
- Lung (with respiratory gating)
- X ray guided imaging
- Oncology

*Bone morphology*

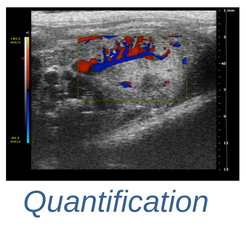
*Lung metastasis in a model of breast carcinoma*



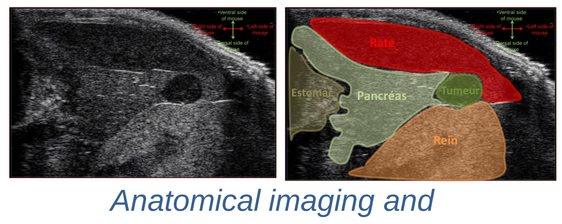
**Equipment**
Faxitron and flat panel
Computed Tomograph CT120
Computed Tomograph Quantum FX

### Ultrasounds imaging

- Analysis of blood flow, organ and tumor vasculature
- Anatomical imaging, cancer biology, embryology and reproduction, cardiology, vascular system, nephrology, hepatology, ophthalmology, rheumatology, regenerative medicine and stem cells
- Ultrasound-guided injection and biopsy
- Contrast imaging (microbubbles)



*Quantification of renal perfusion*




*Anatomical imaging and characterization of tissues*

**Equipment**
Vevo 2100

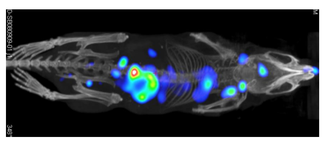
**R&D program :** Embryos imaging by µCT

## FUNCTIONAL AND / OR MOLECULAR IMAGING

### Radioisotopic imaging (SPECT, PET)

- Bone metabolism, lung aloveolocapilary integrity, liver (hepatocytic function, biliary function, gallbladder ejection, phagocytosis), intestine (gastric emptying and first segment intestine motility)
- Cancer (tumor metabolism, targeting by labeled monoclonal antibody)
- Imaging of macrophages, granulocytes phagocytosis and recruitment by lesions
- Biodistribution studies

*Labeled monoclonal antibody biodistribution*



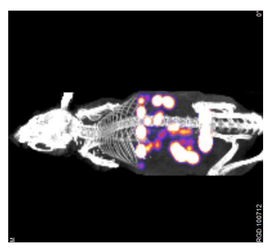
**Equipment**
Gamma imager
NanoSPECT/CT
eXplore Vista PET

**R&D program :** apoptosis, hypoxia

### Optical imaging (bioluminescence, fluorescence, two - photon microscopy)

- Oncology (bioluminescent tumor cell lines or fluorescent probes) : proliferation, metastasis, drug efficacy
- *In vivo* and *in situ* visualization of the spread of infection
- Infection (bioluminescent bacteria)
- *In vivo* imaging in BSL3 conditions
- Gene expression

*Colorectal tumor imaging with RGD targeting probe*



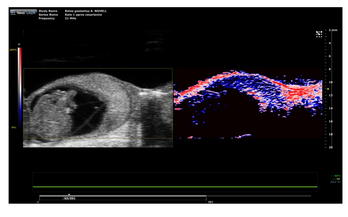
**Equipment**
Ivis Lumina
Ivis Lumina II
BioFLECT
Two photon

**R&D program :** apoptosis

### Photoacoustic (coupled to ultrasounds)

- Lymphatic system including lymphangiogenesis
- Skin (melanoma, cutaneous tumor, aging)
- Molecular imaging, nanoparticles biodistribution and targeting
- Hypoxia

*Placental oxygenation in rat*



**Equipment**
Vevo LAZR

**R&D program :** microbiodistribution in tumors

**We provide researchers with innovative imaging tools and define, together with the teams, the most suited imaging strategies to address their scientific issues.**

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