

MODALITY Comparison



MRI

Magnetic Resonance Imaging (MRI) is a non-invasive imaging technology that uses a powerful magnetic field, radio waves, and a computer to produce detailed images of internal body structures.

Resolution: ~100µm

Applications

- Cancer Biology
- Neurology
- Organ Imaging
- Cardiac Imaging
- Contrast Agent Imaging

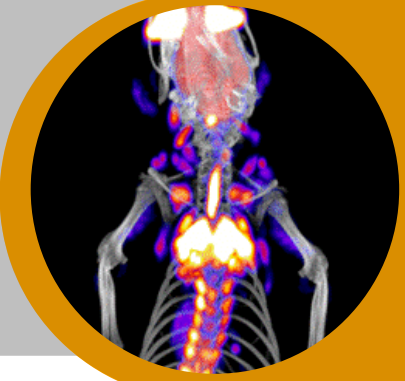
Resolution: ≤50µm

Applications

- Bone Imaging
- Anatomical Reference for Other Imaging Modalities

CT

Computed Tomography (CT) is a non-invasive imaging technology that uses X-ray to create 3D images of internal body structures.



PET

PET (Positron Emission Tomography) imaging allows for non-invasive and longitudinal monitoring of disease and treatment response in small animal models to study the progression of diseases and the effectiveness of potential treatments.

Resolution: ~1mm

Applications

- Cancer Biology
- Neurology
- Cardiac Imaging
- Pharmacokinetics and Pharmacodynamic Imaging

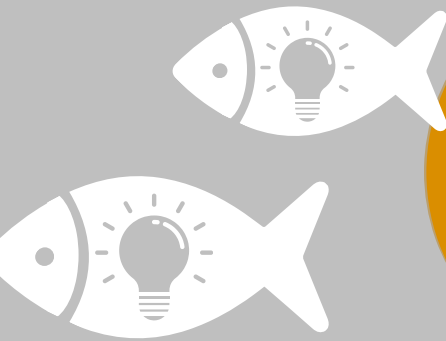
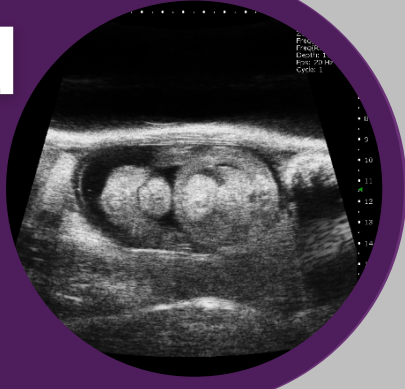
Resolution: ~30-50µm

Applications

- Cancer Biology
- Organ Imaging
- Cardiac Imaging
- Vascular Imaging
- Developmental Biology
- Contrast Agent Imaging

Ultrasound

Ultrasound is a non-invasive tool for preclinical researchers by using high-frequency sound waves to produce internal structure images, aiding disease monitoring, treatment evaluation, and drug effect studies.



Optical Imaging

Optical imaging utilizes bioluminescent (BLI) and fluorescent (FLI) proteins to create optically active cells, offering unique advantages in targeting specific biomarkers.

Resolution: ~1mm

Applications

- Cancer Biology
- Cell Trafficking
- Gene Expression

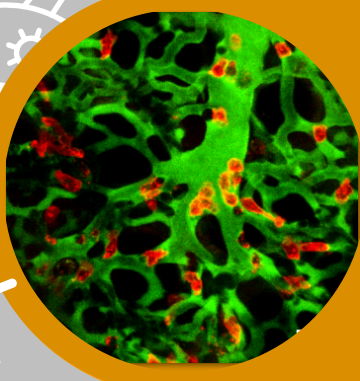
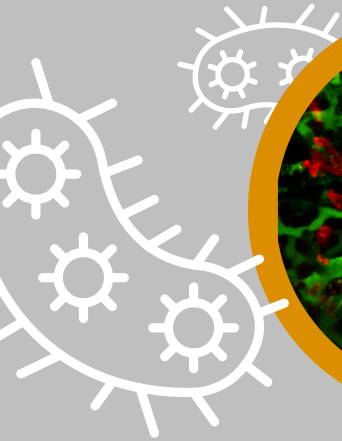
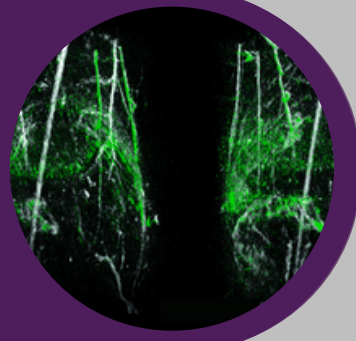
Resolution: ~300µm

Applications

- Cancer Biology
- Neurology
- Developmental Biology
- Contrast Agent Imaging
- Angiograph

Photoacoustic

Photoacoustic and Fluorescence Molecular Imaging provides high-resolution 3D imaging of light-absorbing and fluorescent molecules in small animal models. It is a useful tool for non-invasive preclinical research, allowing the study of physiological parameters and molecular analysis.



Intravital Microscopy

Intravital Microscopy (IVM) is used in tissue engineering, regenerative medicine, and research across various disease areas, allowing real-time imaging of cellular events within an intact imaging subject. It enables high-resolution imaging of deeper tissues and more cell types and imaging targets.

Resolution: ~1µm

Applications

- Cancer Biology
- Neurology
- Cardiac Imaging
- Vascular Imaging
- Organ Imaging
- Musculoskeletal Imaging
- Cell Tracking

Resolution: ~100µm for DEXA
~30µm for highest magnification digital radiography image

Applications

- Bone Imaging
- Body Composition Measurements
- Digital Radiography

DEXA

DEXA is a non-invasive imaging technique that measures bone and tissue density, detects osteoporosis, monitors body composition, and provides highly detailed images for preclinical research and diagnostic purposes.

