

MAGNETIC RESONANCE IMAGING

MIR utilizes a powerful 7 Tesla Varian™ small animal MRI.

Unlike other CRO's that offer services through collaborations with academic institutions or utilize inferior equipment, MIR owns and operates their state-of-the-art equipment on site.



7 Tesla MRI offers optimal signal to noise ratio and image quality for imaging in vivo tumor models, without the complications that higher fields can present. MIR's imaging staff has optimized a variety of in vivo imaging protocols and software to facilitate image acquisition and post-processing:

- Anatomical Imaging
- Quantification of Edema
- Contrast Enhanced Imaging
- Dynamic Contrast Enhanced Imaging
- Diffusion MRI
- Arterial Spin Labeling
- Small Molecule Detection/Spectroscopic Imaging



Innovation in Drug
Evaluation

MIR Preclinical Services



T1, T2 and Contrast Enhanced Imaging

T1 and T2 weighted MRI provides image contrast which is useful for visualizing anatomy and distinguishing tissues and organs. T2-weighting generally provides sufficient contrast to highlight tumors, however, it provides very little distinction between localized edema and solid tumor. T1-weighting is usually used in the presence of a contrast agent, which will tend to accumulate in tumors due to their generally leaky and chaotic vasculature. Many different types of MRI contrast agents have been developed to assist in distinguishing cancerous lesions from normal tissues and highlights differences in the vasculature of normal tissue and tumors.

Diffusion MRI

In preclinical oncology assessments, diffusion MRI is a reliable surrogate marker for therapeutic efficacy and directly translatable to clinical trials. The diffusion of water, as assessed by quantitative diffusion MRI, is highly sensitive to tissue structure at the cellular and subcellular level. Studies of human and animal tumors have demonstrated strong diffusion differences between solid tumors relative to necrotic and cystic regions. This consistent observation provides the rationale for using diffusion as a monitor of cellular changes following anti-cancer therapies.

Dynamic Contrast-Enhanced (DCE) MRI

DCE preclinical MRI imaging is a clinically proven method for the quantification of the effect of vascular targeted therapies. DCE utilizes the imaging of gadolinium uptake into the interstitial space for the quantification of vascular permeability, surface area and blood flow. This quantitative technology can be applied to both clinical and preclinical studies. Color overlay vascular maps showing the permeability of tissues based on the uptake and diffusion of contrast agent can be used to visualize differences in perfusion.

MIR:

If you would like more information on this, or any other MIR service, please feel free to contact the company using the information given below. MIR can also set up a webinar conference to discuss services, technology, capabilities, strategies and protocol design. Let MIR help you meet your preclinical research needs.