

# **MRI Visualization of Living Biology - Techniques, Caveats and Future Directions**

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With advances in engineering and computing, an extraordinary body of imaging technologies and applications has developed over the last 25 years. One of the most important applications of such technologies is study of human anatomy, physiology, pathology, and functions in life sciences and clinical medicine. These imaging technologies have also been intensively applied to study of animal models undergoing genetic, pharmacological, or therapeutic interventions in many areas of molecular biology, toxicology, and drug discovery research. Among the various in vivo and no-invasive imaging modalities available or under development today, magnetic resonance imaging (MRI) is the most powerful and versatile technology platform. Its unparalleled in vivo capabilities offer a broad range of applications covering from noninvasive morphologic measurements, microstructural characterization, tissue metabolism, to sub-system physiologies and brain functions. This presentation will illustrate these technologies with some of the ongoing preclinical MRI projects conducted on high-field rodent MRI scanner in my laboratory.