Challenges and Opportunities for Magnetic Resonance Imaging in Cancer Research

Monday, April 15
1037 Emerging Technologies Building
9:10 a.m.

Progress in the war against cancer is made through the discovery and optimization of novel therapeutic strategies. Small animal models of human disease play a crucial role in the development of new therapies by providing a comparatively uniform system in which the effects of new agents can be tested, characterized and optimized. Magnetic resonance imaging (MRI) is often used to assess disease progression because it can provide good image resolution with sensitivity to a wide range of tissue characteristics that create excellent soft tissue contrast. Functional measurements can inform on disease status, biological barriers to successful therapy, and response to therapy, while spectroscopic measurements can be used to measure biochemical changes due to disease or response to therapy.

Fortunately, the capabilities of preclinical MRI systems correspond well with those of their clinical analogues, providing a clear pathway for the translation of discoveries to clinical care. In this presentation, we will discuss powerful new imaging techniques that offer unprecedented insight into disease, and identify several methods to help overcome key obstacles to the widespread use of MRI in preclinical cancer research.

Dr. James A. Bankson leads the Magnetic Resonance Engineering Laboratory and serves as deputy director of the institutional Small Animal Imaging Facility. Dr. Bankson studied magnetic resonance imaging systems from an engineering perspective in graduate school, under the supervision of Dr. Steven Wright, and received postdoctoral training on experimental biomedical imaging in preclinical cancer research at MDACC. His research interests focus on the advancement of health care through advanced imaging and signal analysis. Dr. Bankson enjoys close collaboration with physician/scientists, radiologists, oncologists and basic cancer researchers to explore new opportunities and identify critical needs to ensure that imaging science advances alongside novel therapeutic approaches to improve the next generation of clinical care. Dr. Bankson has coauthored more than 50 peer-reviewed publications describing technical developments and the use of novel imaging strategies in preclinical cancer research.