Department of Biomedical Engineering
UNIVERSITY OF WISCONSIN–MADISON

Fall 2025
Seminar Series

Molecular Imaging of the Tumor Microenvironment

Marty Pagel PhD
Professor,
Departments of Medical Physics and Radiology
University of Wisconsin

Tumor acidosis, hypoxia, and vascular perfusion are well-known characteristics of the tumor microenvironment. We have developed MRI, MR Fingerprinting, PET/MRI, electron paramagnetic resonance imaging (EPRI), and photoacoustic imaging (PAI) to quantitatively measure extracellular pH, oxygenation, and pharmacokinetic transport rates in solid tumors. We apply these molecular imaging methods to preclinical tumor models, and we have translated some of our methods to evaluate patients who have cancer. We are especially focused on employing molecular imaging to predict treatment effect before starting therapy, and to evaluate the early response to treatment, during evaluations of chemotherapy, radiotherapy and immunotherapy. This presentation will discuss a variety of molecular imaging methods and research applications, and also discuss a value proposition for molecular imaging.

ABOUT the SPEAKER

Dr. Marty Pagel is a Professor in the Departments of Medical Physics and Radiology at the University of Wisconsin-Madison. His research in academia and industry has evolved from chemistry to biomedical engineering to molecular imaging. His current research employs a variety of imaging modalities to interrogate biomarkers of the tumor microenvironment and wound healing. He has developed these methods for pre-clinical and clinical imaging, especially to evaluate cancer therapies and surgery. In addition, Dr. Pagel has taught courses in chemistry, biomedical engineering, cancer biology, and physiology, and many workshops about scientific writing. Dr. Pagel has held many leadership positions in the molecular imaging research community, including roles in scientific societies, many grant review panels, and journals focused on molecular imaging.

Monday, September 22 at Noon
1003 Engineering Centers (Tong Auditorium)