

Pioneering Research Programs

To improve disease detection and management, our focus is on development and application of state-of-the-art functional and morphological MR methods for early detection and monitoring of treatment response in:

- Diabetic Retinopathy
- Brain Trauma and Stroke
- Alzheimer's Disease
- Cancer Detection and Treatment
- Multiple Sclerosis
- Musculoskeletal Disease

Researchers at the Forefront

The Magnetic Resonance Center is proud of the Wayne State University faculty involved in these world-leading research programs that are funded by the National Institutes of Health, national and international private organizations, and pharmaceutical and automobile industries. Faculty from many departments, schools and institutes such as the Karmanos Cancer Institute and Henry Ford Hospital all participate in using this facility.

For information on how you can help to support these initiatives with a philanthropic donation, please contact:

Elsa K. Silverman

Office of Development

313-577-6482

Mission Statement

The Magnetic Resonance Center is committed to the development of the MR methods and their application in the pre-clinical and clinical subjects to better understand human physiology and disease. We promote the use of MR-based methods to the Wayne State University scientific community and support the implementation of MR methods through education, assistance in experimental design, and data collection and analysis. The center also encourages educational training for medical students, graduate students, post-doctoral fellows and visiting faculty.

Recent Pioneering Advances

Wayne State University faculty have developed a number of major innovations. These include:

- Functional Imaging of Retinal Oxygenation
- Imaging Stroke and Trauma with Unprecedented Accuracy
- Diagnosing and Following Treatment of Tumors
- Imaging the Blood Vessels of the Brain with Very High Resolution

For more information please visit our website:

www.mrc.wayne.edu

The Vaitkevicius Magnetic Resonance Center

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The Vaitkevicius Magnetic Resonance Center (Key Personnel)

E. Mark Haacke, PhD

Dr. Haacke's research interests include: MR Angiography, Susceptibility Weighted Imaging (SWI) to study vascular disease, Stroke Imaging, Better Detection of Cancer and Brain Function. He supervises graduate students in engineering, computer science and medical physics. He and Dr. Sehgal work together to enhance current clinical methods and take research ideas into the clinical realm.



Vivek Sehgal, MD

As Director of the Clinical MR Center, Dr. Sehgal's main interests are in adopting state-of-the-art MR capabilities into the clinical realm. He works closely with the research faculty in evaluating new methods for better diagnosing

tumors and studying vascular disease. He and Dr. Haacke work closely together to coordinate joint areas of interest and involve clinical faculty in research.

Jiani Hu, PhD

Dr. Hu's research interests include the development of MR spectroscopy and its utilization in studying metabolic changes that take place in diseased tissue. He is currently studying: West Nile disease, Breast Cancer, and Neuromuscular Disorders.



Bruce Berkowitz, PhD

Dr. Berkowitz's goal is to prevent vision loss and blindness in patients with diabetes and in very low birth weight infants. His approach is to use fMRI methods to detect the effectiveness of treatment as early in the course of the disease as possible.

Norman Cheng, PhD

Having just joined the faculty at Wayne State University, Dr. Cheng comes with experience in theoretical aspects of MR system design and fMRI models. His current interests include studying brain oxygenation and quantifying brain iron.



Stefan Posse, PhD

Dr. Posse, an Adjunct Professor at Wayne State University has interests in the neuroscience application of MRI techniques to real-time functional imaging (BOLD fMRI methods) and neurochemistry using MR spectroscopy in combination with other functional neuroimaging techniques.

Equipment

Human Brain Siemens/Bruker 4.0T Scanner
This state-of-the-art high field system is being used for ground breaking studies in brain imaging. Research includes functional brain imaging, tumor evaluation, vascular disease and developmental work.

Human Whole Body Siemens Sonata 1.5T Scanner

This instrument is used for research and development of clinical studies. Many important discoveries have been made with this system.

Small Animal Spectrometer/Imager 4.7T

This Bruker BiospecAvance 4.7 T horizontal-bore magnet-based multi-nuclear NMR system is capable of all state-of-the art imaging methods. This instrument is used primarily for spectroscopy and imaging in small animals, using ³¹P, ¹H, ²D and ¹⁹F.

A 4.0T MR Angiogram



An example MR image taken at 4.0T of the major arteries in the Human Brain.