Causland Center has dedicated labs for research and behavioral testing. Our MRI system is fully equipped for functional brain imaging, with a back projection computer screen, optical trigger pulses (to ensure acquisition times do not drift with respect to behavioral tasks), optical response buttons, MRI compatible tactile stimuli, MRI-compatible ERG/EEG, MRI-compatible pulse and respiration measurement, high-quality (ceramic) audio presentation headphones. All research images are stored on a dedicated RAID DICOM server (and mirrored to a server in another building). We also include high-end Sun Grid Engine clusters for data analysis. Our computers include the most popular tools for image analysis (SPM, FSL, AFNI, MedInria), as well as our own popular tools (www.mricro.com).

The Siemens 3-Tesla Magnetic Resonance Imaging system at the McCausland Center for Brain Imaging is used to understand how the healthy brain works.
In addition, this system provides an important tool for understanding brain injury and guiding rehabilitation.

The McCausland Brain Imaging Center is situated within the Palmetto Richland Memorial Hospital. The Siemens 3-Tesla magnetic resonance imaging system is fitted with a 12-channel head coil. The scanner is shared between clinical and research work, with dedicated research time each day. This is optimal for scientists who wish to conduct clinical studies where a research-only facility is inappropriate (e.g. allowing acute stroke clinical scans to be acquired on the same system as the chronic follow-up images).

Scientific Challenges

Understanding the human brain remains one of the great scientific challenges of our generation. With approximately 100 billion nerve cells, the brain controls our personality, emotions, memories, speech, perception and movement. Our world-class center provides powerful new tools to discover how the brain functions.

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Individuals interested in participating in a brain-imaging studies, or students who are interested in training should directly contact the scientists who lead the research teams. If you are a teacher who is interested in a tour, or are a scientist who is interested in using our facility, please contact one of the directors:

Co-Directors:
Chris Rorden, Ph.D. (803) 404-2573
Julius Fridriksson, Ph.D. (803) 777 5931

Managing Director (contact):
Roger Newman-Norlund, Ph.D. (Managing Director) : (803) 530-6793 email: rnorlund@mailbox.sc.edu
South Carolina is committed to building a vibrant knowledge-based economy, one that will result in higher-paying jobs and, ultimately, a better standard of living and quality of life for its citizens. A cornerstone of this commitment is the visionary SmartState Program, established by the South Carolina General Assembly in 2002.

The McCausland Center for Brain Imaging (McCausland Center) is a Center of Economic Excellence within the Health Sciences South Carolina collaborative. With its new Siemens 3 Tesla Magnetic Resonance Imaging system McCausland Center will focus on memory and attention, detection of deception, and brain stroke. With initial Center of Excellence funds totaling $5 million, $1.5 million gifts from both the Palmetto Richland and Greenville Hospital systems, and $1.75 million in matching funds from Peter J. McCausland, a '71 USC graduate, McCausland Center will provide USC faculty, as well as collaborative and externally funded researchers, the ability to perform high-resolution brain imaging studies in the Columbia, SC area.

Health Sciences South Carolina (HSSC) was established in 2004 as the nation’s first statewide biomedical research collaborative. Today it is composed of six of the state’s largest health systems and the state’s largest research-intensive universities, Clemson University, the Medical University of South Carolina and the University of South Carolina. The collaborative was formed with the vision of transforming the state’s public health and economic wellbeing through research. It also is committed to educating and training the health care workforce.

In its first five years of existence, the unprecedented statewide collaboration is working. HSSC provides financial support to 12 centers of economic excellence (now known as SmartState) which have recruited 12 world-class researchers and created jobs and investment opportunities. Research conducted by the program is leading to new products and services with the potential to improve public health while creating economic development opportunities. The collaborative has engaged new partners to address issues such as health care quality and patient safety and is leading an effort to develop a statewide strategic plan for e-health. HSSC is in the process of developing a statewide health information technology infrastructure to support research and advance patient care. These efforts have attracted investment from government funding sources as well as private foundations and corporations that share this vision. HSSC and its partners are working hard to make good health possible.
The SmartState Program is investing in talent and infrastructure at South Carolina’s three research universities to drive economic development. The SmartState Program supports research in areas that will help South Carolina companies grow, attract new business to the state, build a technology-rich economy, and create more opportunities for South Carolinians.

Julius Fridriksson is a Arnold School of Public Health Distinguished Professor in Communication Disorders and a Co-Director of the McCausland Center for Brain Imaging. His research is focused on brain plasticity associated with stroke recovery. Specifically, the work in Dr. Fridriksson’s lab tackles communication disorders such as aphasia and apraxia of speech in relation to brain damage and how brain plasticity mediates recovery from these disorders. Dr. Fridriksson’s research is supported by grants from the NIH.

Dr. Chris Rorden is the SmartState Chair in Neuroimaging Research and Co-director of the McCausland Center for Brain Imaging. Dr. Rorden is Associate Editor for Frontiers in Human Neuroscience, creator of the free MRICro software viewer and a professor of psychology at the University of South Carolina. Stroke is the leading cause of disability in the United States, often causing difficulties with speech and perception. Dr. Rorden’s Neuropsychology Lab examines the behavioral difficulties people experience after brain injury, neurological disorders and speech and perception.