

Brain Rehabilitation, Advanced Imaging, and Neuroscience (BRAIN): An IUPUI Signature Center Initiative (SCI)

Flora Hammond, MD,^{1,2} Andrew Saykin, PhD,³ James Malec, PhD,^{1,2} Michelle Keiski, PhD,^{1,3}

¹Department of Physical Medicine and Rehabilitation, Indiana University School of Medicine; ²Rehabilitation Hospital of Indiana; ³Indiana University Center for Neuroimaging

Abstract

The Mission of the Indiana Center for Brain Rehabilitation, Advanced Imaging, and Neuroscience (ICBRAIN) is: **to develop and disseminate techniques and methodologies for combining advanced neuroimaging, neurogenetics and other neurophysiological measures with precision behavioral measurement to evaluate novel rehabilitation interventions for people with acquired brain injury.** Traumatic and other types of acquired brain injury (ABI) affect millions of U.S. citizens each year, many of whom experience persistent disabilities. Over the past decade there has been a notable rise in research activities to address serious gaps in the knowledge base of ABI, including neuroimaging, outcome measurement, and intervention studies to change function. However, brain injury researchers have not yet established solid links between these research agendas. The BRAIN SCI fills this gap in neuroscience by bringing together an interdisciplinary team of clinical researchers to (1) advance basic science and clinical knowledge to the next level of integration, (2) translate the knowledge gained directly into clinical care for improved patient outcomes, and (3) use the newly integrated knowledge to drive the leading edge of translational research. BRAIN research includes the Indiana Traumatic Brain Injury Model System, funded by the National Institute for Disability and Rehabilitation Research (NIDRR), the InterFACE Center for the study of emotions and interpersonal interactions after neurologic injury, and nine other externally funded research projects. BRAIN research ranges from development of a neurogenetic repository and advanced neuroimaging studies to determine critical elements in recovery from brain injury to intervention studies to improve recovery to a multi-national study of an intervention for phantom limb pain. BRAIN research is interdisciplinary. Disciplines currently involved in BRAIN research include physiatry, neuropsychology, neuroradiology, rehabilitation science, biomedical engineering, and psychiatry. The Indiana School of Medicine Neuroscience Center of Excellence provides a home for BRAIN and supports its interdisciplinary Steering Committee. In addition to partnerships with the Neuroscience Center, the Center for Neuroimaging, and the InterFACE Center, BRAIN collaborates with the Rehabilitation Hospital of Indiana, the Stark Neuroscience Institute, and the School of Health and Rehabilitation Sciences. This presentation will describe BRAIN's mission, vision, organization, partnerships, and ongoing research projects in greater detail.