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Neuromodulation of the Spinal Circuitry for the Recovery of Human Paralysis Approach

Susan Harkema

Susan J. Harkema, PhD, Professor, holds the Owsley B. Frazier Rehabilitation Chair in Neurological Surgery and is the Associate Director of the Kentucky Spinal Cord Injury Research Center at the University of Louisville. Over the last 20 years, her research has focused on neural plasticity of spinal networks and recovery of function after spinal cord injury. Her more recent studies have shown that people with chronic paralysis can regain the ability to voluntarily move their legs and stand independently with epidural stimulation. This broadened the scope of the translational research program to include technology development to improve implantable epidural stimulators. Dr. Harkema has maintained an NIH funded research program since 1998 in neuroplasticity after human spinal cord injury and served as the Director of an NIH-funded program project grant from 1998-2008.



Dr. Harkema has published more than 180 scholarly manuscripts and book chapters. She has delivered over 100 worldwide lectures and keynotes, has been a grant reviewer for the NIH, Roman Reed, Mission Connect, FISM Society, and has sat on numerous advisory boards and review panels. Many of her 28 mentored graduate students and post-doctoral fellows have excelled in their careers.

Dr. Harkema has co-authored seven United States patents and has received several honors and awards throughout her career. In 2007, the National Spinal Cord Injury Association nominated her into the SCI Hall of Fame for Achievement in Research in Quality of Life, and in 2008, Dr. Harkema was a co-recipient of the Reeve-Irvine Research Medal, awarded to individuals who have made critical contributions to promoting repair of the damaged spinal cord and recovery of function. In 2011, Dr. Harkema received the Difference Maker Award from the Rick Hansen Foundation and the Breakthrough Award from Popular Mechanics. She received the John Stanley Coulter Award for significant contribution to the field of rehabilitation by the ACRM in 2012 and received the Innovator of the Year award from Business First in 2014. Dr. Harkema earned her Bachelor of Science and PhD from Michigan State University and conducted her postdoctoral fellowship in neurophysiology at the University of California, Los Angeles.