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**Title of Symposium:** Brain Machine Interface for Neural Prosthetics and Recovery of Function

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**Description of submitted symposium (please limit to 2000 characters):** The injured or diseased brain and spinal cord can be cut off from direct connections to sensorimotor circuits that control movement and environmental manipulation. Direct recording of cellular activity in the brain after spinal cord injury and stroke provides a way for neuronal activity to be coupled back to movement control and environmental manipulation through neural prosthetics. This field has rapidly advanced with improvements in recording devices, computational analysis of neuronal activity and of prosthetics. Recently, distinct brain regions have served as recording sites for movement programs, including even partially damaged tissue adjacent to stroke. This symposium will present approaches in brain machine interface (BMI) approaches across distinct brain recording sites, patterns of movement or prosthetic control, and disease states from innovators in this field. Tyson Aflalo, Ph.D. is a post-doctoral fellow in the lab of Dr. Richard Anderson (Caltech) and has published significant papers (Science, Curr Biol) on recording and motor imagery from parietal cortex in non-human primates and humans. His work identifies novel approaches to motor control from non-primary motor areas in humans. Karunesh Ganguly, M.D, Ph.D. Assistant Professor of Neurology, UCSF studies neural prosthetic control from peri-infarct cortex in stroke. His work has been published in leading journals (Journal of Neuroscience, PLOS Biol) and has extended BMI approaches to brain tissue that may be partially damaged or adjacent to damaged brain. Leigh Hochberg, M.D., Ph.D., Professor of Neurology at Brown and MGH, is a leader in BMI approaches. His research focuses on motor cortex recording, decoding and prosthetic arm control in humans. He has published in leading journals such as Nature, the New England Journal of Medicine, Nature Medicine and the Journal of Neuroscience.

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**Length of time required for symposium?:** 1.5 hours

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**Additional Presenters (Limited to 4 additional presenters, list full name and email address) Please Note: Any Non-member speakers must receive prior approval from the Program Chair.:** see aboe

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**What is the role of each presenter?:** Expert

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**Objective 1:** To describe the role of BMI in recovery of function after spinal cord injury

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**Objective 2:** To describe the role of BMI in recovery of function after stroke.

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**Objective 3:** To describe the process of developing and then utilizing BMI in humans with neurological disease.