



Dr. Etienne de Villers-Sidani is an associate professor in the Department of Neurology and Neurosurgery, and a neurologist specializing in cognitive disorders. He has a particular interest in understanding the role of sensory experience and brain plasticity in the emergence and remediation of cognitive impairments. His laboratory uses electrophysiological techniques to determine

how sounds and auditory training both shape cortical circuits and alter the perception of sounds, and their use in memory and decision-making. Their main goal is to develop novel therapeutic strategies that can improve cognitive function in patients suffering from conditions related to abnormal sensory-motor processing – dementia, age-related cognitive decline, stroke, traumatic brain injuries, among other conditions. Key to the design of new evidence-based approaches to cognitive rehabilitation is a greater understanding of the basic mechanism of the regulation of brain plasticity. Dr. de Villers-Sidani's experiments also aim to determine the impact of age on the function and flexibility of brain circuits used in sensory processing. A fundamental objective is to gain a better understanding of the complex interplay that exists between the physical structure of brain circuits and neuronal electrical activity, which is tightly linked to sensory experience and behaviour.