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The Role of Pain-Facilitating Circuits in Chronic Pain after Traumatic Brain Injury

Abstract

Chronic pain after traumatic brain injury (TBI) exerts a steep toll on Veterans and civilians alike, but one of the major obstacles to developing effective therapies for these patients is a critical knowledge gap in understanding the underlying pathophysiology of TBI-related pain. Emerging data from clinical and laboratory studies have suggested that dysfunction of the endogenous pain facilitatory system is involved in chronic pain after TBI. Using a robust animal model of TBI and cutting-edge circuit-focused neuroscience tools, this project aims to elucidate how the neurophysiology of a brainstem pain-facilitating circuit is altered following TBI and contributes to chronic pain. Successful completion of the proposed studies will provide insights into functional changes in the pain-modulating system and pain persistence after TBI, and could facilitate our understanding of other centralized pain conditions, such as chronic postsurgical pain, Gulf War Syndrome, and fibromyalgia.