Protein Profile  The primary goal of my research is to identify the mechanisms that underlie neuronal hyper-excitability disorders. Calcium channels are critical in the control of neuronal excitability and are therefore intrinsically involved in such processes. My current research focuses on the involvement of T-type calcium channels in the etiology of epilepsy, more specifically how they contribute to the pathophysiological intrinsic-cellular and network oscillations in the thalamocortical system. Altered T-type calcium channel function has been identified in both human epilepsy patients and animal models of epilepsy. These ion channels are of particular interest due to their ability to generate the intrinsic oscillatory activity and “burst” pattern neuronal firing, predicted to underlie some types of epileptic seizure. My objective is to establish how the altered function of T-type calcium channels affect the firing properties of neurons within key epileptogenic networks and how this affects network activity as a whole, by using experimental approaches from the molecular, cellular, network and whole brain level.

Research Area

Press:

Publications:
Stuart M Cain & Terrance P Snutch (2012). T-type calcium channels in burst-firing, network synchrony, and epilepsy. Biochimica Biophysica Acta (Epub Ahead of Print: PMID 22885138)


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