Abstract:

The last decade has seen significant progress in identifying sleep mechanisms that support cognition. Most of these studies focus on the link between electrophysiological events of the central nervous system during sleep and improvements in different cognitive domains. However, the dynamic shifts of the autonomic nervous system during sleep have been largely overlooked. Across a series of studies, I will discuss the independent and interactive roles of central and autonomic activities during sleep in cognition. Further, I will show evidence supporting that sleep is a competitive arena in which both memory domains vie for limited resources, experimentally demonstrated when boosting one system leads to a functional trade-off in electrophysiological and behavioral outcomes. These findings help understand the shared and distinct mechanisms underlying episodic and working memory processes and open new territory for sleep research.