

Abstract of Presentation

Presentation Title

Spatial Regulation by Importins and Ran in the Nervous System

Name (Underline the family name)

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Abstract

Importins are found in axons of peripheral sensory neurons at significant distances from the cell body and importin β 1 is increased after nerve lesion by local translation of axonal mRNA, leading to formation of a high-affinity nuclear localization signal (NLS) binding complex that traffics retrogradely with the motor protein dynein to communicate information on axonal injury to the neuronal cell body. This mechanism is regulated by the Ran machinery in axons, taking advantage of local axonal translation of critical components of the system such as RanBP1. Similar importin-based mechanisms are thought to link synaptic and nuclear signaling in neurons of the central nervous system. Localization of specific transcripts in neuronal processes is usually controlled by untranslated sequences (UTR) that interact with RNA transport proteins. We will describe the identification of axonal localization signals in RanBP1 and importin β 1 transcript UTRs and the generation of mouse models that enable specific examination of the role(s) of axonal importins in neuronal physiology.