Seminar 2

The Role of ARL13B in Regulation of Hedgehog Signaling and Occurrence of Ciliopathies

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Abstract:

An integral part of embryonic development and tissue homeostasis in vertebrates is the Hedgehog (Hh) signaling pathway. Typically, this pathway takes place within the primary cilium, an organelle composed of microtubules. Dysregulation of the Hh signaling pathway can lead to a group of disorders known as ciliopathies. In order for the primary cilium to form and function, ARL13B, a regulatory GTPase, is essential. Additionally, ARL13B plays an important role in intracellular trafficking, ciliary membrane biogenesis, and signal transduction. It has recently been discovered that ARL13B modulates Smoothened (SMO) and GLI transcription factors' localization and activity in the Hh signaling pathway. The purpose of this presentation is to discuss in detail the structure of the primary cilium as well as the mechanism of Hh signaling within this organelle. Additionally, the relationship between ARL13B and the Hh signaling pathway, the primary cilium, and ciliopathies will be discussed.

Keywords: Hedgehog signaling pathway, Primary cilium, ARL13B, Ciliopathies