The intraflagellar transport A (IFT-A) complex is required for the transit of GLI:SUFU complexes to the ciliary base

Gillespie, ME., Liu, Y C., Rothfels, K.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

03/05/2024

Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

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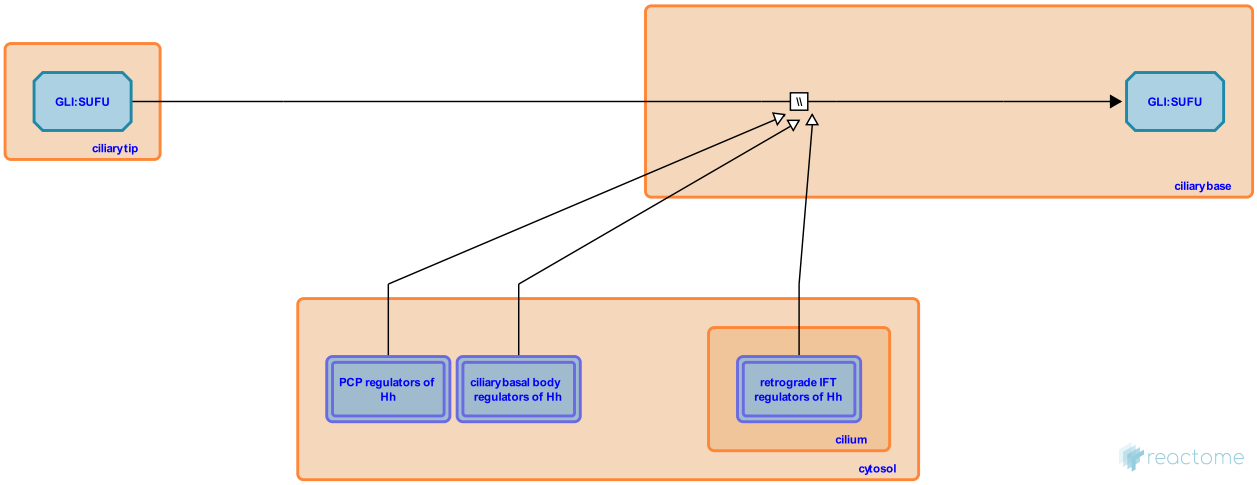
Stable identifier: R-HSA-5610766

Type: omitted

Compartments: ciliary base



Vertebrate hedgehog signaling depends on the passage and/or localization of many of the pathway components through the primary cilium (reviewed in Goetz and Anderson, 2010). Although GLI and SUFU proteins are not concentrated in the cilium in the absence of Hh signaling, processing and/or degradation of the transcription factors requires transit through the cilium and basal levels of these proteins can be detected there (Wen et al, 2010; Tukachinsky et al, 2010; Kim et al, 2006; Liu et al, 2005; Haycraft et 2005). Consistent with this, members of both the IFT-B and IFT-A complex, as well as components of the ciliary basal body and the kinesin-2 and dynein motor proteins have been identified as regulators of Hh signaling (Huangfu et al, 2003; Tran et al, 2008; Liu et al, 2005; Houde et al, 2006; Huangfu et al, 2005; May et al, 2005; Cortellino et al, 2009; Vierkotten et al, 2007; Ferrante et al, 2006; Weatherbee et al, 2009; Liem et al, 2012; Qin et al 2011). KIF7, a microtubule-associated kinesin-type motor that negatively regulates the length of axonemal microtubules, is also required for correct localization of GLI:SUFU (He et al, 2014). Finally, a number of PCP pathway effectors have recently been shown to be required for ciliogenesis, and mutations in these genes disrupt GLI processing (Zeng et al, 2010; Gray et al, 2009; Heydeck et al, 2009; Park et al, 2006).

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Editions

2014-07-17	Authored	Rothfels, K.
2014-07-25	Edited	Gillespie, ME.
2014-08-01	Reviewed	Liu, Y C.