

GLI translocates to the nucleus

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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.

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Literature references

- Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics*, 18, 142. [↗](#)
- Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics*, 33, 3461-3467. [↗](#)
- Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res*, 46, D649-D655. [↗](#)
- Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology*, 14, e1005968. [↗](#)

Reactome database release: 78

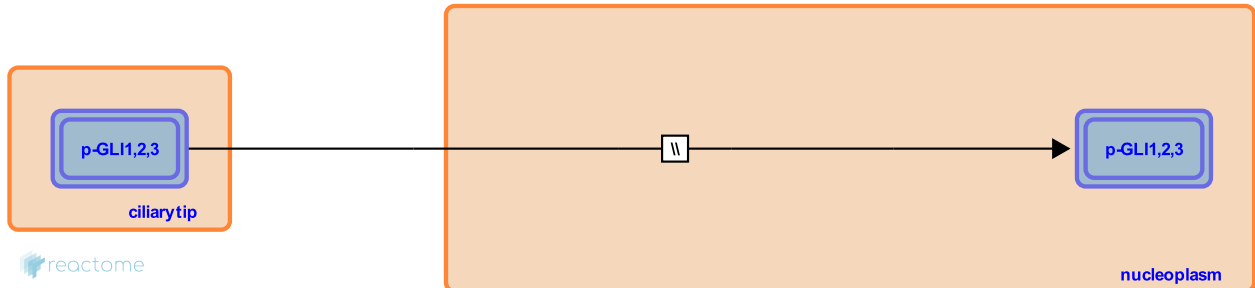
This document contains 1 reaction ([see Table of Contents](#))

GLI translocates to the nucleus ↗

Stable identifier: R-HSA-5635843

Type: omitted

Compartments: ciliary tip, nucleoplasm



Activation of SMO downstream of Hh ligand binding results in the dissociation of the SUFU:GLI complex and the translocation of the full-length GLI proteins to the nucleus where it is converted to a short-lived transcriptionally active form (Pan et al, 2006; Kim et al, 2009; Wen et al, 2010; Humke et al, 2010; Tukachinsky et al, 2010; reviewed in Briscoe and Therond, 2013).

Literature references

- Milenkovic, L., Rohatgi, R., Scott, MP., Humke, EW., Dorn, KV. (2010). The output of Hedgehog signaling is controlled by the dynamic association between Suppressor of Fused and the Gli proteins. *Genes Dev.*, 24, 670-82. ↗
- Kim, J., Kato, M., Beachy, PA. (2009). Gli2 trafficking links Hedgehog-dependent activation of Smoothed in the primary cilium to transcriptional activation in the nucleus. *Proc. Natl. Acad. Sci. U.S.A.*, 106, 21666-71. ↗
- Salic, A., Lopez, LV., Tukachinsky, H. (2010). A mechanism for vertebrate Hedgehog signaling: recruitment to cilia and dissociation of SuFu-Gli protein complexes. *J. Cell Biol.*, 191, 415-28. ↗
- Pan, Y., Bai, CB., Wang, B., Joyner, AL. (2006). Sonic hedgehog signaling regulates Gli2 transcriptional activity by suppressing its processing and degradation. *Mol. Cell. Biol.*, 26, 3365-77. ↗
- Scales, SJ., Hongo, JA., Wen, X., Evangelista, M., Lai, CK., de Sauvage, FJ. (2010). Kinetics of hedgehog-dependent full-length Gli3 accumulation in primary cilia and subsequent degradation. *Mol. Cell. Biol.*, 30, 1910-22. ↗

Editions

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