

CHD8 binds beta-catenin to negatively regulate WNT-dependent gene expression

Kikuchi, A., Matthews, L.

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

The contents of this document may be freely copied and distributed in any media, provided the authors, plus the institutions, are credited, as stated under the terms of [Creative Commons Attribution 4.0 International \(CC BY 4.0\) License](https://creativecommons.org/licenses/by/4.0/). For more information see our [license](https://reactome.org/licenses/).

17/05/2024

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).

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: 88

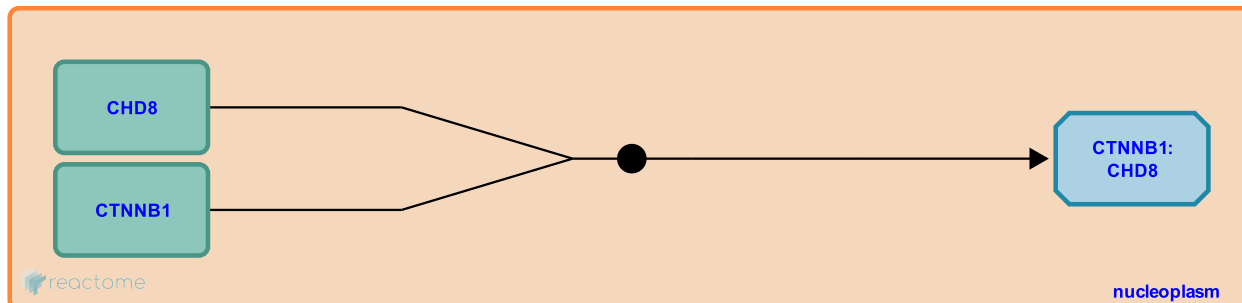
This document contains 1 reaction ([see Table of Contents](#))

CHD8 binds beta-catenin to negatively regulate WNT-dependent gene expression [↗](#)

Stable identifier: R-HSA-5368580

Type: binding

Compartments: nucleoplasm



CHD8 is a ATP-dependent chromatin remodeling factor that binds directly to beta-catenin to repress transcription of WNT target genes (Thompson et al, 2008; Sakamoto et al, 2000). ChIP studies show that CHD8 is recruited to the promoters of several beta-catenin-responsive targets, and knockdown of CHD8 results in induction of these target genes in vivo (Thompson et al, 2008). An N-terminal fragment of CHD was independently identified as the rat protein Duplin. Duplin was shown to negatively regulate WNT target gene expression by competing with TCF7L2 for beta-catenin binding (Sakamoto et al, 2000; Kobayashi et al, 2002). A corresponding fragment of CHD8 has not been identified in human cells and its significance is not clear.

Literature references

Thompson, BA., Bochar, DA., Lin, G., Tremblay, V. (2008). CHD8 is an ATP-dependent chromatin remodeling factor that regulates beta-catenin target genes. *Mol. Cell. Biol.*, 28, 3894-904. [↗](#)

Kishida, M., Kikuchi, A., Asashima, M., Sakamoto, I., Takada, S., Hino, S. et al. (2000). A novel beta-catenin-binding protein inhibits beta-catenin-dependent Tcf activation and axis formation. *J. Biol. Chem.*, 275, 32871-8. [↗](#)

Kikuchi, A., Kadoya, T., Asashima, M., Hinoi, T., Michiue, T., Kishida, S. et al. (2000). Inhibition of Wnt signaling pathway by a novel axin-binding protein. *J. Biol. Chem.*, 275, 37030-7. [↗](#)

Editions

2014-04-22	Authored	Kikuchi, A.
2014-05-07	Edited	Matthews, L.