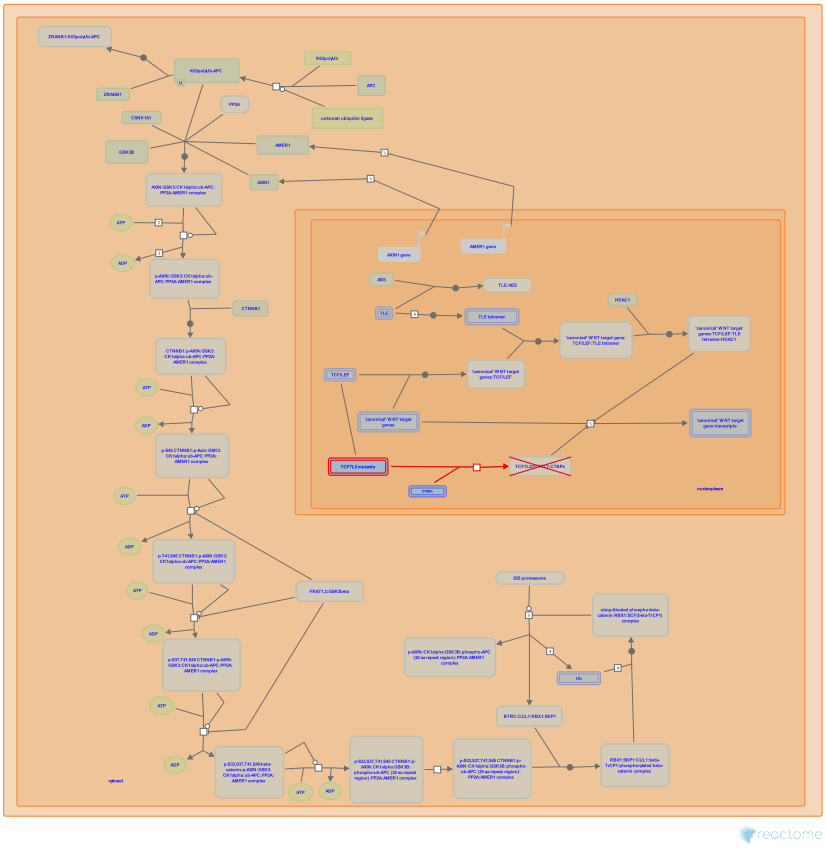
Signaling by TCF7L2 mutants



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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the Reactome Textbook.

30/04/2024

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.

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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. ↗

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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. ↗

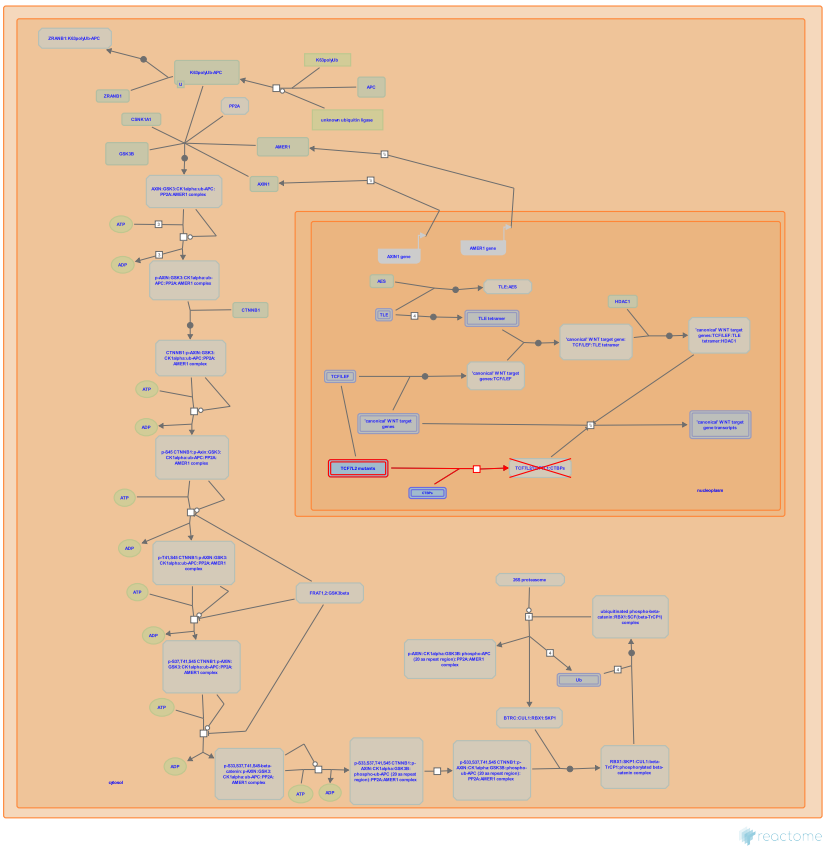
Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology, 14*, e1005968. ↗

Signaling by TCF7L2 mutants ↗

Stable identifier: R-HSA-5339700

Compartments: nucleoplasm

Diseases: colorectal cancer



~50% of colorectal cancers with microsatellite instability show frameshift mutations in TCF7L2 that result in the loss of the CTBP-binding region (Duval et al, 1999; Cuillliere-Dartigues et al, 2006). These cancer cells show decreased colocalization of CTBP and TCF7L2 and have increased expression of a TCF-dependent reporter gene (Cuilliere-Dartigues et al, 2006).

Literature references

Duval, A., El-Bchiri, J., Cuilliere-Dartigues, P., Hamelin, R., Fontanges, P., Buhard, O. et al. (2006). TCF-4 isoforms absent in TCF-4 mutated MSI-H colorectal cancer cells colocalize with nuclear CtBP and repress TCF-4-mediated transcription. *Oncogene, 25*, 4441-8. ↗

Editions

2014-04-03	Edited	Matthews, L.
2014-04-03	Authored	Rothfels, K.
2014-05-12	Reviewed	Salahshor, S.
2014-05-22	Reviewed	Woodgett, J.

TFC7L2 mutants don't bind CTBP ↗

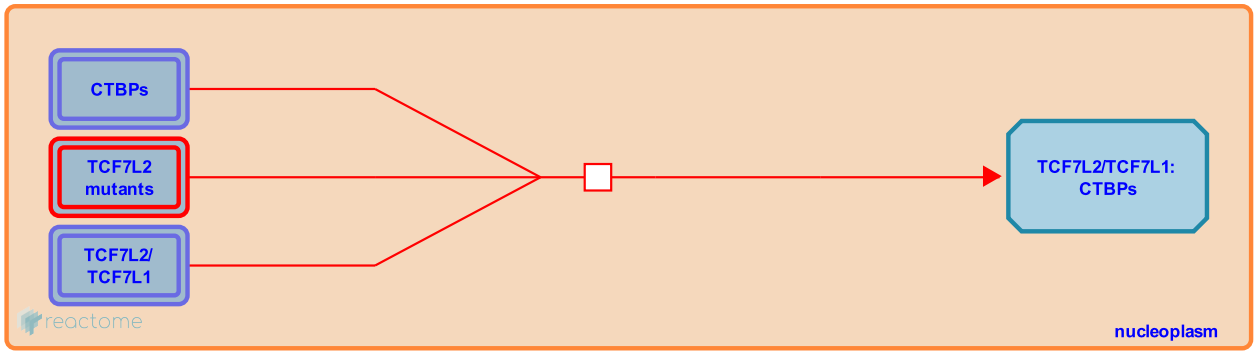
Location: Signaling by TCF7L2 mutants

Stable identifier: R-HSA-5334052

Type: transition

Compartments: nucleoplasm

Diseases: colorectal cancer



TCF7L2 is subject to frameshift and missense mutations in gastric and colorectal cancers that abolish the CTBP binding domain (Duval et al, 1999a; Duval et al, 1999b; Duval et al, 2000; Tang et al, 2008). These mutant proteins fail to colocalize with CTBP and are unable to repress TCF-mediated transcription in vitro (Cuilliere-Dartigues et al, 2006).

Literature references

Rolland, S., Duval, A., Thomas, G., Tubacher, E., Hamelin, R., Bui, H. (2000). The human T-cell transcription factor-4 gene: structure, extensive characterization of alternative splicings, and mutational analysis in colorectal cancer cell lines. *Cancer Res., 60*, 3872-9. ↗

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