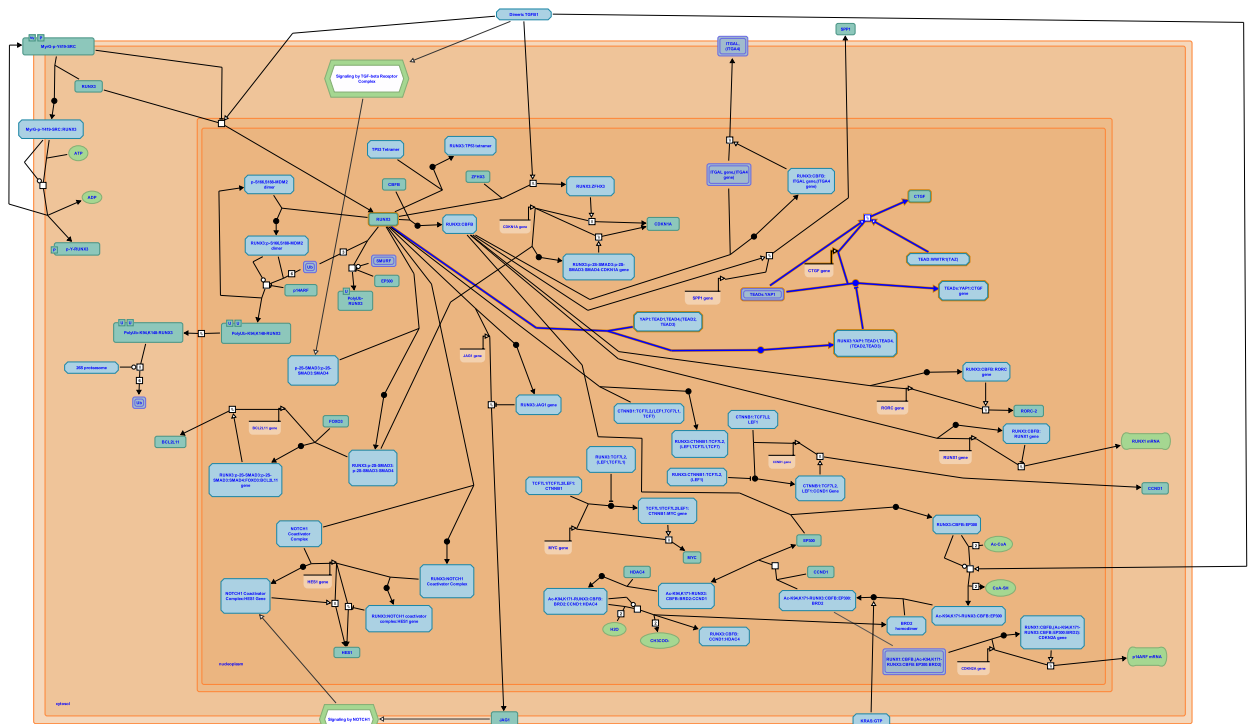


RUNX3 regulates YAP1-mediated tran- scription



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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

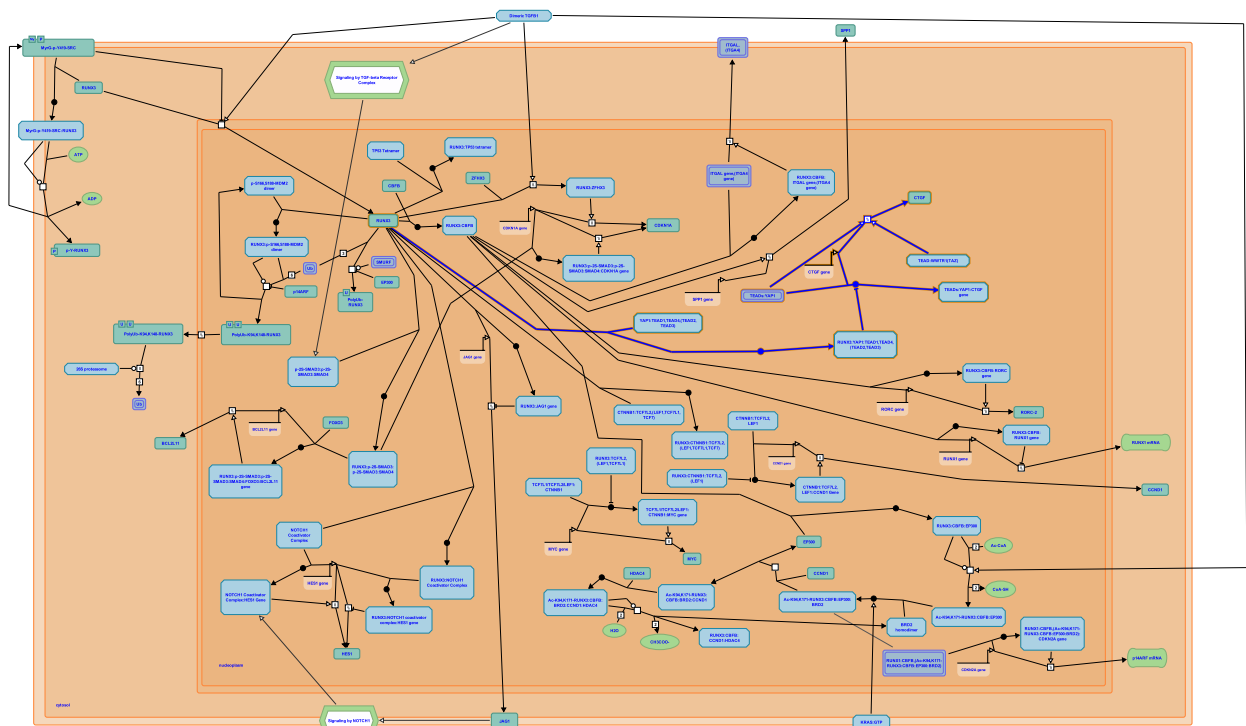
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Reactome database release: 70

This document contains 1 pathway and 3 reactions ([see Table of Contents](#))

RUNX3 regulates YAP1-mediated transcription ↗

Stable identifier: R-HSA-8951671



reactome

Association of RUNX3 with the TEADs:YAP1 complex inhibits loading of the TEADs:YAP1 to the CTGF promoter, thus negatively regulating transcription of the CTGF gene which encodes the Connective tissue growth factor (Yagi et al. 1999, Zhao et al. 2008, Qiao et al. 2016).

Literature references

- Zhao, B., Ye, X., Yu, J., Li, L., Li, W., Li, S. et al. (2008). TEAD mediates YAP-dependent gene induction and growth control. *Genes Dev.*, 22, 1962-71. ↗
- Qiao, Y., Lin, SJ., Chen, Y., Voon, DC., Zhu, F., Chuang, LS. et al. (2016). RUNX3 is a novel negative regulator of oncogenic TEAD-YAP complex in gastric cancer. *Oncogene*, 35, 2664-74. ↗
- Yagi, R., Chen, LF., Shigesada, K., Murakami, Y., Ito, Y. (1999). A WW domain-containing yes-associated protein (YAP) is a novel transcriptional co-activator. *EMBO J.*, 18, 2551-62. ↗

Editions

2016-12-12	Authored	Orlic-Milacic, M.
2017-01-31	Reviewed	Ito, Y., Chuang, LS.
2017-01-31	Edited	Orlic-Milacic, M.

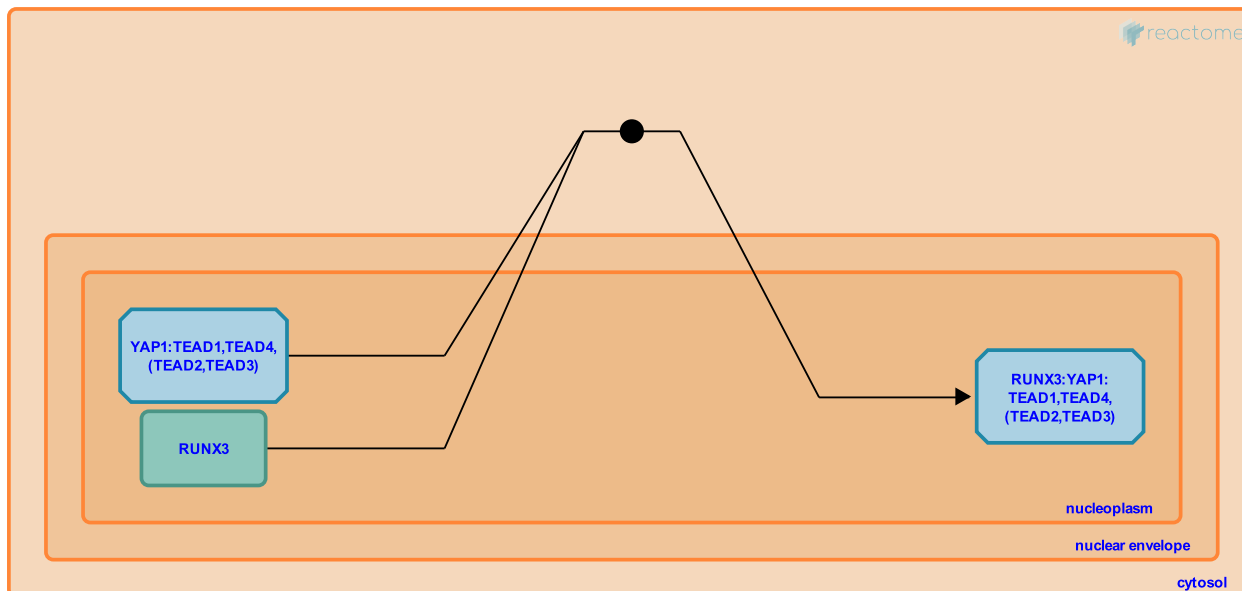
RUNX3 binds TEADs and YAP1 ↗

Location: [RUNX3 regulates YAP1-mediated transcription](#)

Stable identifier: R-HSA-8951676

Type: binding

Compartments: cytosol



RUNX3 interacts with both YAP1 and TEAD proteins. The interaction with YAP1 involves the PY motif of RUNX3 and the WW domain of YAP1. The interaction with TEADs involves the Runt domain of RUNX3 and the DNA recognition helix of TEADs. RUNX3 was shown to directly interact with TEAD1 and TEAD4. Based on sequence similarity, it is highly probable that RUNX3 also interacts with TEAD2 and TEAD3. The interaction of RUNX3 with YAP1 and/or TEADs does not prevent formation of the YAP1:TEADs complex (Yagi et al. 1999, Qiao et al. 2015).

Followed by: [TEADs:YAP1 binds CTGF gene](#)

Literature references

Yagi, R., Chen, LF., Shigesada, K., Murakami, Y., Ito, Y. (1999). A WW domain-containing yes-associated protein (YAP) is a novel transcriptional co-activator. *EMBO J.*, 18, 2551-62. ↗

Qiao, Y., Lin, SJ., Chen, Y., Voon, DC., Zhu, F., Chuang, LS. et al. (2016). RUNX3 is a novel negative regulator of oncogenic TEAD-YAP complex in gastric cancer. *Oncogene*, 35, 2664-74. ↗

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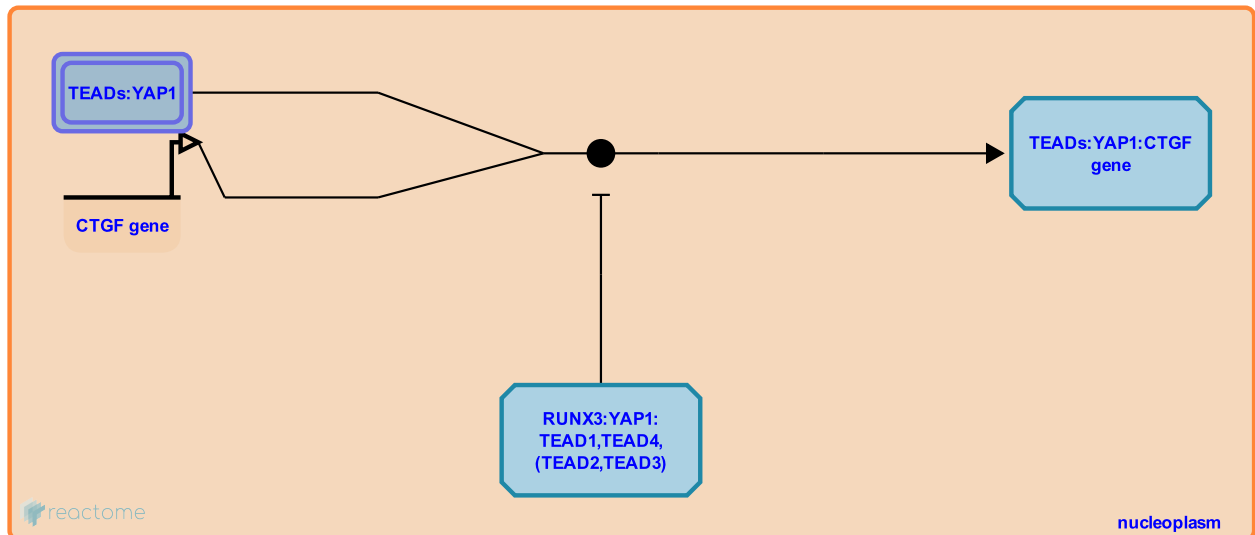
TEADs:YAP1 binds CTGF gene ↗

Location: [RUNX3 regulates YAP1-mediated transcription](#)

Stable identifier: R-HSA-8951695

Type: binding

Compartments: nucleoplasm



The complex of YAP1 and one TEAD proteins (TEAD1, TEAD2, TEAD3 or TEAD4) binds to TEAD-binding sites in the promoter of the CTGF gene (Zhao et al. 2008). Association of RUNX3 with the TEADs:YAP1 complex inhibits loading of the TEADs:YAP1 to the CTGF promoter (Qiao et al. 2016).

Preceded by: [RUNX3 binds TEADs and YAP1](#)

Followed by: [Expression of CTGF](#)

Literature references

Zhao, B., Ye, X., Yu, J., Li, L., Li, W., Li, S. et al. (2008). TEAD mediates YAP-dependent gene induction and growth control. *Genes Dev.*, 22, 1962-71. ↗

Qiao, Y., Lin, SJ., Chen, Y., Voon, DC., Zhu, F., Chuang, LS. et al. (2016). RUNX3 is a novel negative regulator of oncogenic TEAD-YAP complex in gastric cancer. *Oncogene*, 35, 2664-74. ↗

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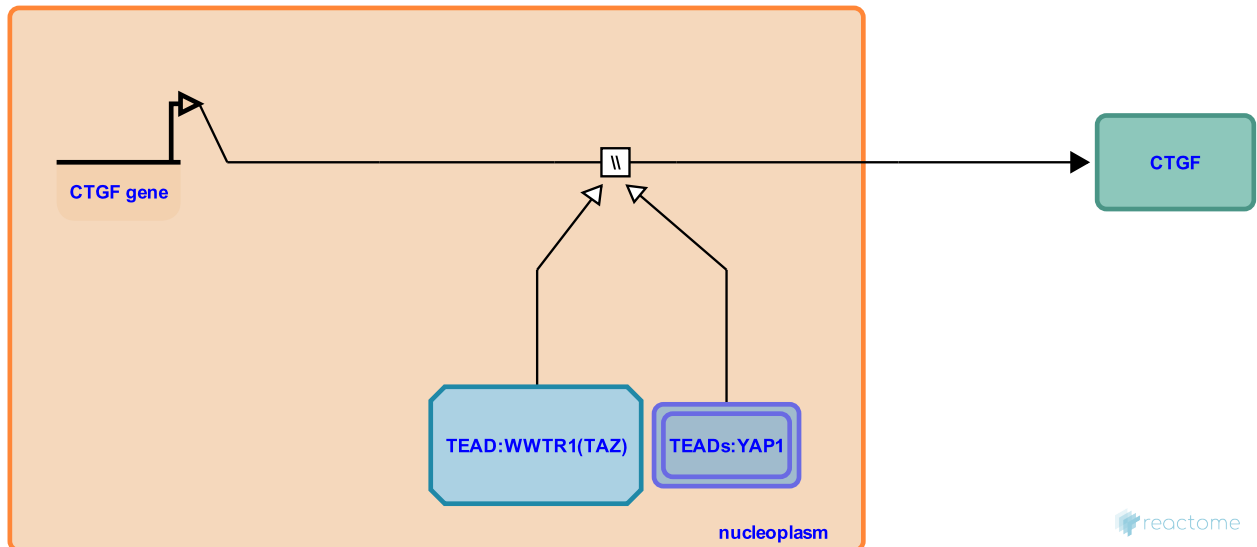
Expression of CTGF ↗

Location: [RUNX3 regulates YAP1-mediated transcription](#)

Stable identifier: R-HSA-1989766

Type: omitted

Compartments: nucleoplasm, extracellular region



The CTGF gene is transcribed to yield mRNA and the mRNA is translated to yield protein. Transcription of the CTGF gene is increased by both YAP1:TEAD and WWTR1(TAZ):TEAD transcriptional coactivator:transcription factor complexes, so that CTGF is one of the many genes whose expression is downregulated by the action of the hippo cascade (Zhang et al. 2009; Zhao et al. 2008).

Preceded by: [TEADs:YAP1 binds CTGF gene](#)

Literature references

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Editions

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Table of Contents

Introduction	1
❏ RUNX3 regulates YAP1-mediated transcription	2
➤ RUNX3 binds TEADs and YAP1	3
➤ TEADs:YAP1 binds CTGF gene	4
❏ Expression of CTGF	5
Table of Contents	6